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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 IN SET #131

DUMONT MODEL RA-147A

Dumont Model RA-147A is similar to RA-117A except for the following changes:

A 17BP4A picture tube is used.

L34 (79MC trap) is not used.

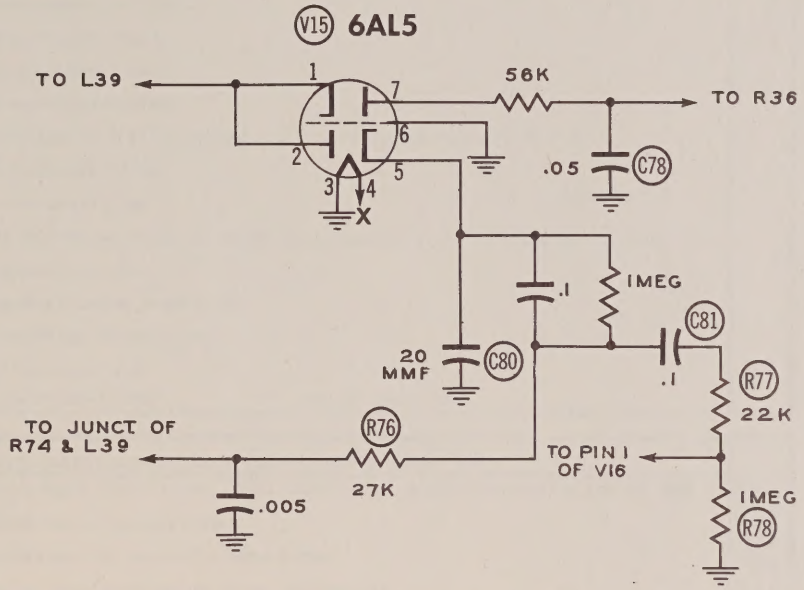
A 47MMF capacitor is connected between Pin #9 of V11 (6T8) and ground.

A 2.5MMF capacitor is connected between Pin #7 of V7 (6AL5 Video Det.) and ground.

A 47MMF capacitor is connected between ground and the junction of R71, R70 and C75.

R92 was changed to 820K.

Model RA-147A uses a new Sync and AGC detector circuit. A partial schematic is shown below:



SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET #173

MOTOROLA MODELS 17F12D (TV only), 17K13D, 17T9EF, 17T9, 17T10D (Ch. TS-401)

Motorola Models 17F12D (TV only), 17K13D, 17T9EF, 17T9, 17T10D uses a TS-401 Chassis which is very similar to chassis TS-351 except for the following changes:

R26 is changed to 56K.

R25 is changed to 2.2K.

C26 is not used.

R82 is changed to 6.8K.

R29 is changed to 8.2K.

R30 is changed to 150Ω .

C31 is changed to 5000MMF.

R33 is not used.

R34 is changed to 100K.

A 500MMF 20 KV capacitor was added between Pin #7 of V16 (1B3GT) and ground.

A 5000MMF Capacitor was added between the Focus Control (R3) arm and ground.

PRODUCTION CHANGES
BULLETIN 49

PRODUCTION CHANGES
BULLETIN 49

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SYLVANIA MODELS 1-090
1-247 (Ch. 1-168)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 17 IN SET #99	
Code C10, C11, C12, C13 B10, B11	Sylvania Models 1-090 and 1-247 using Chassis 1-168 Coded C10, C11, C12, C13, B10, B11 have one or all the following changes made. R35 was changed to 3.3K. A .005MFD capacitor was added between the high side of R39 and ground. R81 was changed to 470K.
Code C14, C15, C16, C17, C18, B12, B13, B14, B15.	Sylvania Models 1-090 and 1-247 using Chassis 1-168, coded C14, C15, C16, C17, C18, B12, B13, B14, B15, B16 have the following changes: R26 was changed to 1.5K. C36 was changed to 1.5MMF. R33 was removed from the circuit. R34 was changed to 12K. C42 was changed to 4.7MMF. C58 was changed .05MFD. R135 was changed to 47K. C47 was changed to 10MMF. Pin #2 connection of V6 was removed from ground and reconnected to Pin #7 of V6. R40 was changed to 4.7K. R36 was changed to 33K. C48A and C48B was changed to .005MFD ceramic capacitor. C48B was removed from Pin #2 - 7 of V7 and connected to ground. Brightness control R2 is tied to -135 v. M6 and M7 was changed 3/10 amp. R134 was changed to 3K. R74 was changed to 680K. Cont. on reverse side

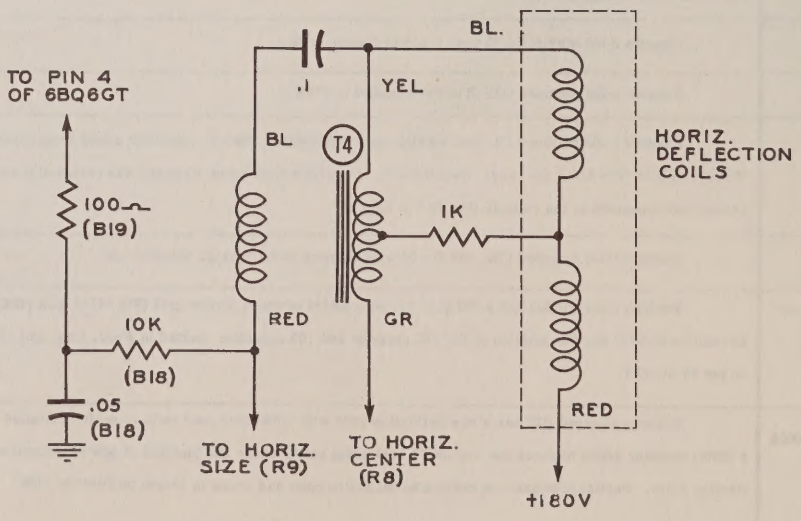
SYLVANIA MODELS
1-125-1, 1-197-1, 1-245-1
1-246-1 (Ch. 1-186)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET #113	
Code C19, C20, C21, C22, C23, B19, B20	Sylvania Models 1-125-1, 1-197-1, 1-245-1, 1-246-1, using Chassis 1-186 coded C19, C20, C21, C22, C23, B19 and B20 have the following changes: Chassis coded C20 uses a B19 or higher bridge. A new horizontal deflection yoke is used part #100-0002. C82 was removed from ground and connected to pin #3 of V10 (Vertical Osc. 12AU7). M6 was changed to ½ amp. M7 was changed to 1/4 amp. Slo-Blo type.

SYLVANIA MODELS 1-076,
1-128 (Ch. 1-108)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET #96	
Code C19	Sylvania Models 1-076, 1-128 using Chassis 1-108, Code C19 has the B+ fuse change to 3/8 amp. and the B- fuse change ½ amp.
Code C20	Chassis 1-108 stamped C20 uses a B19 or higher bridge.
Code C21	Chassis 1-108 stamped C21, R74 ras changed to 750K.
Code C22	Chassis 1-108 stamped C22 had a additional .00025MFD - 1000 V. capacitor added from plate (Pin #5) to grid (Pin #1) of the Vert. Output 6AQ5. Capacitor C109 (grid by pass) was removed from ground and connected to the cathode (Pin #3 V15 12AU7).
Code C23	Chassis 1-108 stamped C23, the B + fuse as changed to a 1/4 amp. Slo-Blo type.
Bridge Change B19	Bridges stamped B19 had a 100 ohm resistor added between screen grid (Pin #4) of V22 (6BQ6GT Horizontal Output) and the junction of the 10K resistor and .05 capacitor (added in Prod. Chg. Bul. #2) on pin #4 of V22.
B20 Part #100-0002	Bridges stamped B20 has a new deflection yoke with horizontal yoke coils in series installed and a 1000Ω resistor added between the top on T4 horizontal output choke and junction of new horizontal deflection coils. Partial schematic of horizontal deflection coils and choke is shown on reverse side Cont. on reverse side

	R75 was changed to 470K. C92 was removed from high side of L32 and connected to ground. R111 was changed to 470K. R117 was changed to 22K. R116 was changed to 47K.	SYLVANIA MODELS 1-090 1-247 (Ch. 1-168)
Code C19, C20, C21, B17, B19	Sylvania Models 1-090 and 1-247 using Chassis 1-168 coded C19, C20, C21, B17 and B19 have the following changes: R74 was changed to 750K. T6 was changed to part #100-0002 . R136 when used was changed to 15Meg. A 220K resistor was added between ground the junction of C110 and C117.	
Code C21, C22, C23	Sylvania Models 1-090 and 1-247 using Chassis 1-168 coded C21, C22, C23 have the following changes: Chassis coded C21 use a B18 or higher bridge. M7 was changed to a 1/4 amp. Slo-Blo type. A 25MMF capacitor was connected between Pin #1 and Pin #5 of V18 (Vertical Output 6AQ5). C83 was removed from ground and connect to Pin #3 of V15 (Vert. Osc. 12AU7).	

		SYLVANIA MODELS 1-076, 1-128 (Ch. 1-108)

PHOTOFACT* Folder

*TRADE MARK

BENDIX
MODELS OAK3, 21K3, 21KD, 21T3, 21X3

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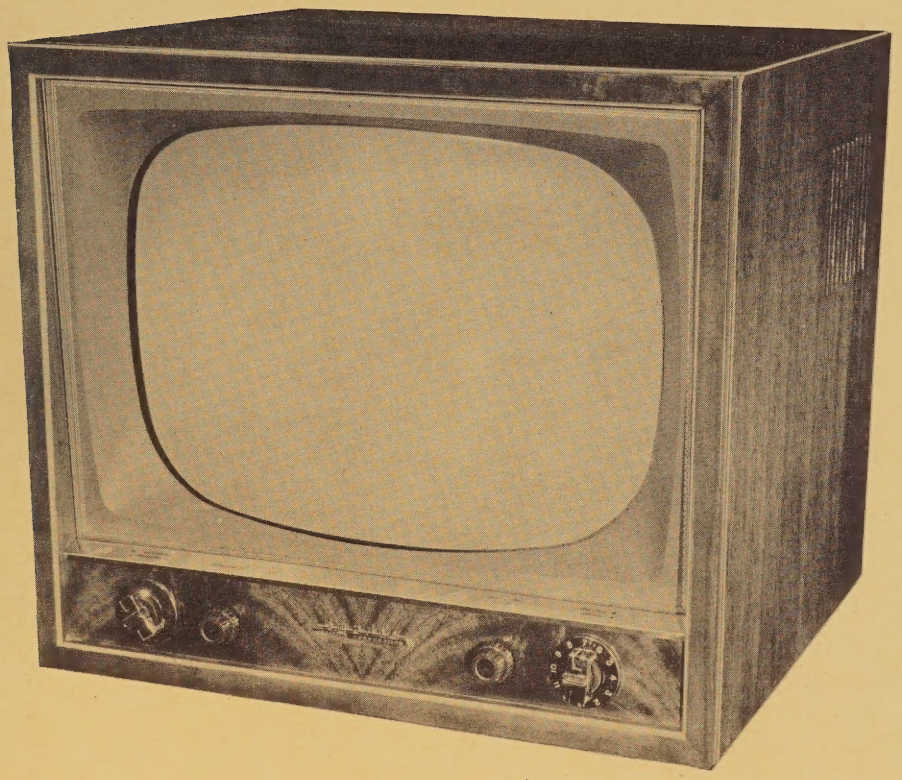

MODEL 21T3

BENDIX
MODELS OAK3, 21K3, 21KD, 21T3, 21X3

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DATE 10-52 SET 183 FOLDER 2

PHOTOFACT* Folder
*TRADE MARK

BENDIX
MODELS OAK3, 21K3, 21KD, 21T3, 21X3

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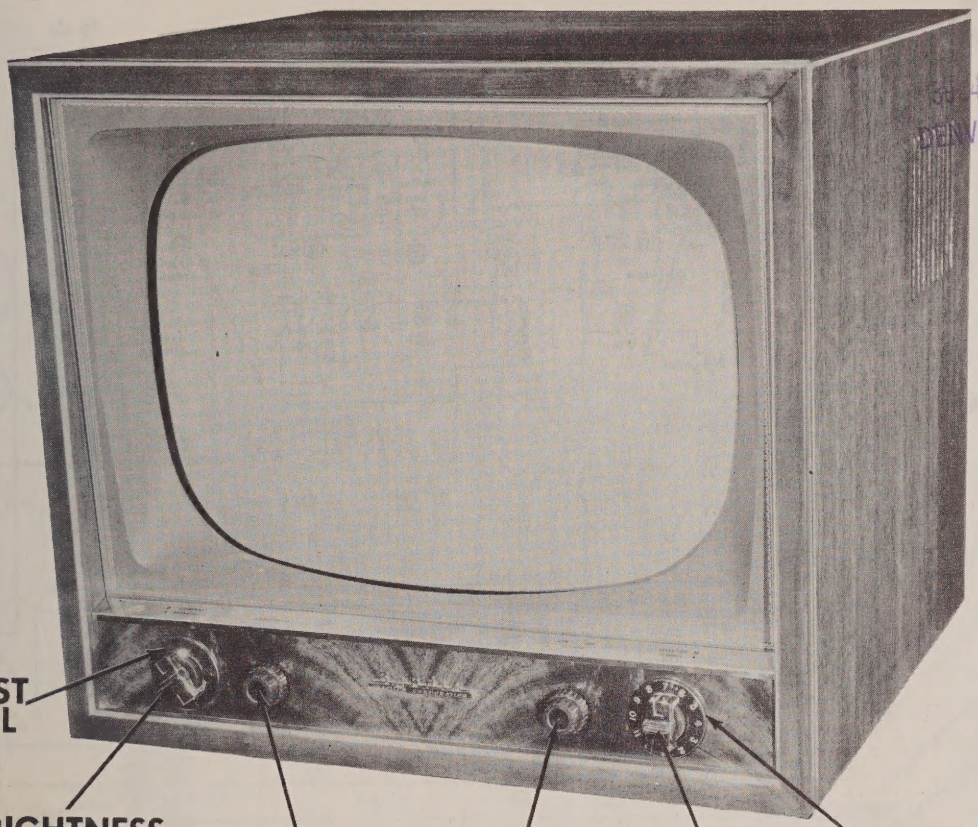

BENDIX
MODELS OAK3, 21K3, 21KD, 21T3, 21X3

BENDIX 21T3

TRADE NAME	Bendix Models OAK3, 21K3, 21KD, 21T3, 21X3
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore, Md.
TYPE SET	Television Receiver
TUBES	Twenty-four
POWER SUPPLY	110-120 volts AC-60 cycle RATING 1.9 amp. @ 117 volts AC
TUNING RANGE	Channels 2 thru 13

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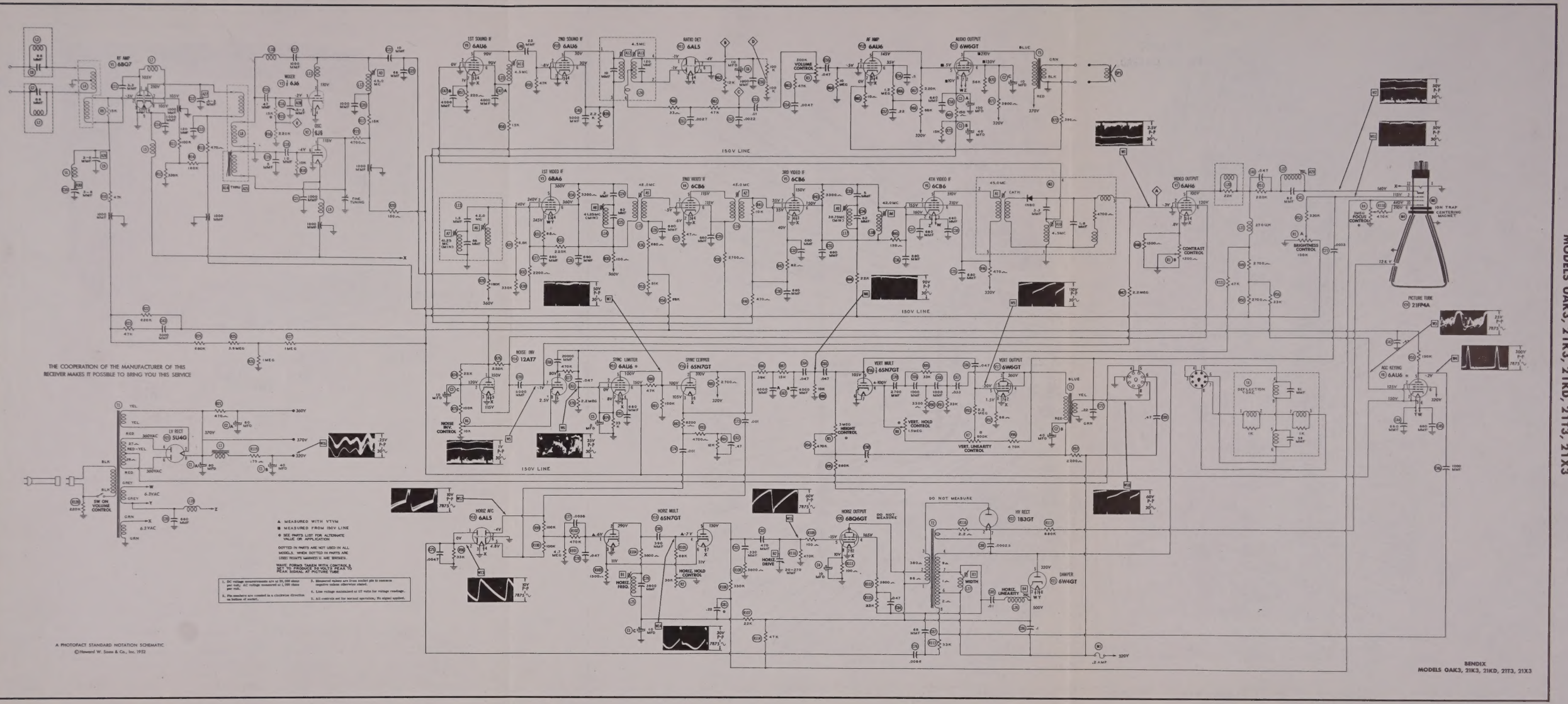
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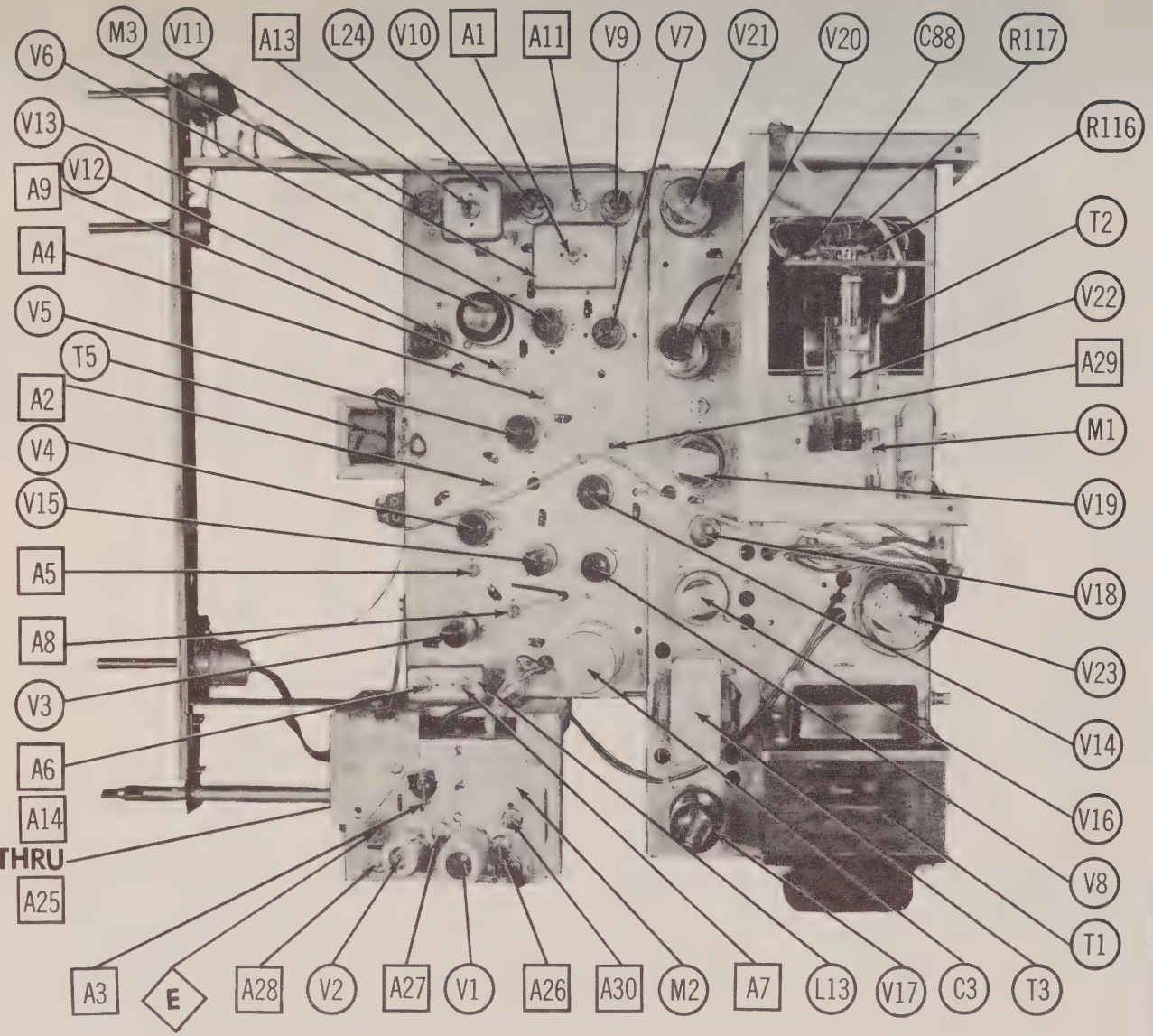
BENDIX
MODELS OAK3, 21K3, 21KD, 21T3, 21X3
MODELS OAK3, 21K3, 21KD, 21T3, 21X3
BENDIX



CHASSIS TOP VIEW

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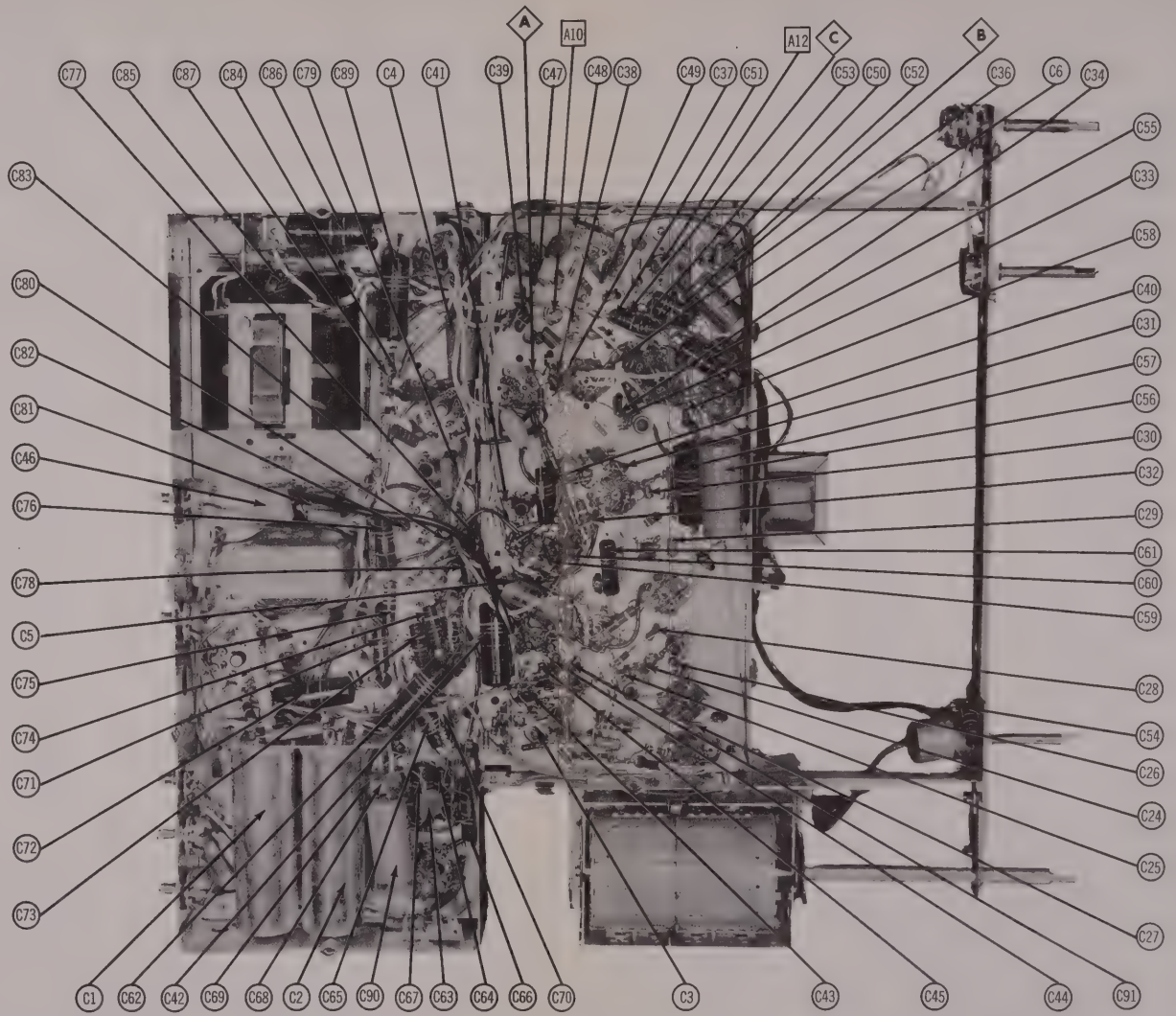
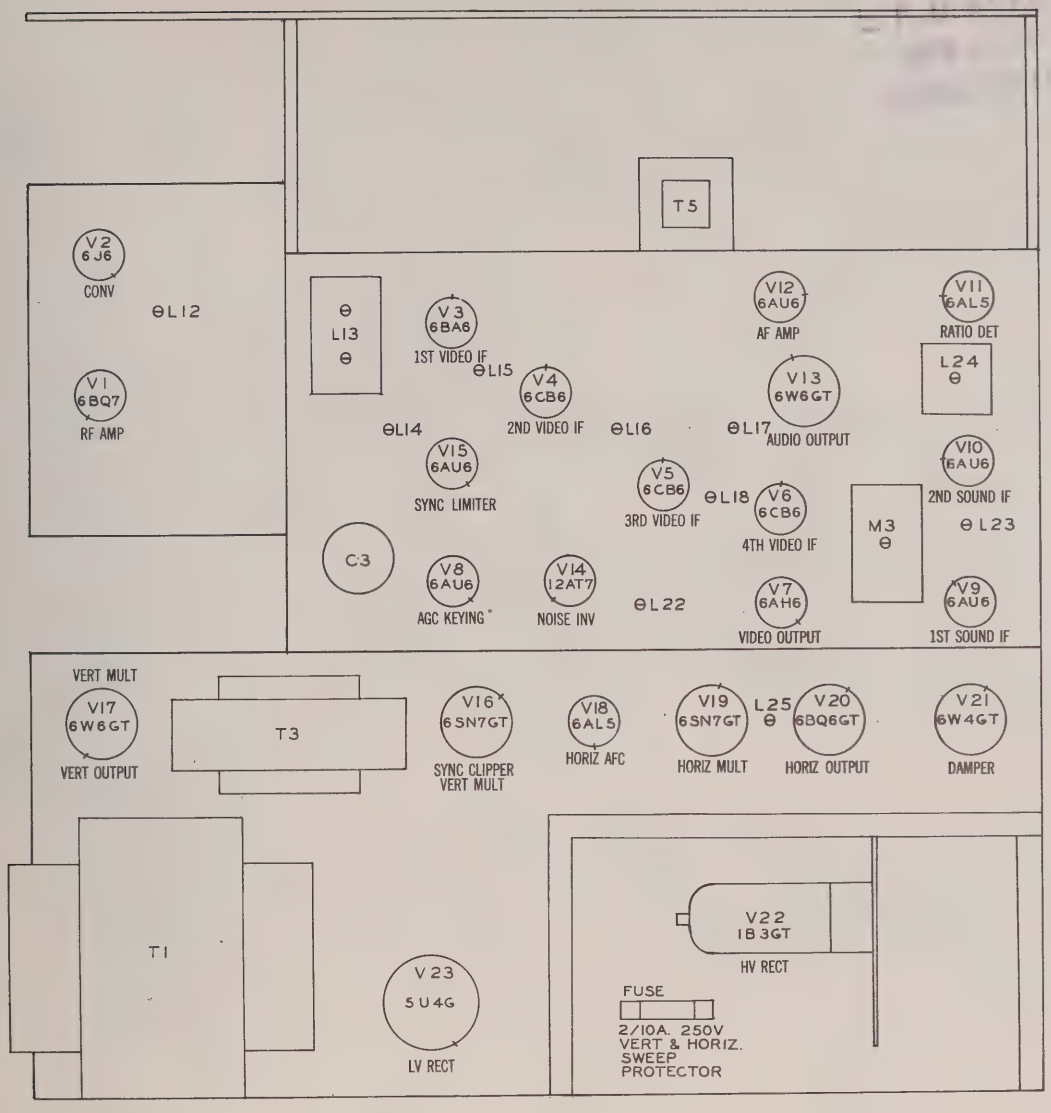


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, No sound - V23

LOSS OF PICTURE OR SOUND
No pic, No sound, Has raster - V2, V3, V4, V5, V6, V13
No pic, No sound, Has snow - V1, V2, V3
No pic, Has sound, has raster- V7, V24
Has pic, No sound - V9, V10, V11, V12, V13
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V16
No Horiz. sync - V16, V18, V19
No Vert. or Horiz. sync - V14, V15, V16

SWEEP FAILURE
No raster, has sound - V19, V20, V21, V22, V23, Fuse (M1)
No vertical deflection - V17
Poor vert. linearity or foldover - V16, V17
Poor horiz. linearity or foldover - V19, V20, V21
Narrow picture - V19, V20, V21, V22, V23
Vert. off freq. - V16
Horiz. off freq. - V16, V17, V18

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube , V19, from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the IF AGC line (Junction of R36 and R54). Connect the positive lead to chassis.
Remove the AGC amplifier tube, V8, from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	45MC (Unmod)	Any	DC probe to point ◇A◇ Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	42 MC	"	"	A4, A5, A6	"
3.	"	"	41.25MC	"	"	A7, A8	Adjust for MINIMUM deflection.
4.	"	"	39.75MC	"	"	A9	Adjust for MINIMUM deflection. Repeat steps 1 thru 4 for optimum results.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC	Any	Vert. amp. to point ◇A◇. Low side to chassis.		Check for response curve similar to fig.1. If necessary retouch A1 thru A6 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point ◇B◇ to chassis. The junction of these two resistors is alignment Point ◇D◇ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	2.2Meg Carbon Resistors	High side through 2.2Meg to point ◇A◇. Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ◇B◇ Common to chassis.	A10, A11, A12	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point ◇C◇. Common to point ◇D◇	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
8.						A10	Turn A10 one full turn counter-clockwise to insure maximum attenuation of 4.5MC signal into video amplifier.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	2.2Meg Carbon Resistor	High side thru 2.2Meg to point ◇A◇. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point ◇B◇. Low side to chassis.	A10, A11, A12	Disconnect stabilizer capacitor C6. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
7.	"	"	"	"	"	Vert. amp. to point ◇C◇. Low side to chassis.	A13	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.
8.							A10	Turn A10 one full turn counter clockwise to insure maximum attenuation of 4.5MC signal into video amplifier.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Leave bias battery connected as under Video IF Alignment. V8 should remain out of its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point ◇A◇. Low side to chassis.	A14	Adjust to place sound marker in trap notch as in fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Move negative lead of 3 volt battery to the junction of R22, R23 and R24 (on terminal board near V8 socket). Leave positive lead on chassis.
Let V8 remain out of socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

DENY.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 47KΩ to point (E). Low side to chassis.	A26, A27 A28	Adjust for response curve similar to fig. 5, with markers above 90%.
11.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13			Check for response curve similar to fig. 5. If markers fall below 70% on any channel make compromise adjustments of A26, A27 and A28 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

4.5MC TRAP ALIGNMENT

With receiver aligned and operating, observe picture for evidence of 4.5MC interference.
If present, adjust A29 for minimum interference.

IF TRAP ADJUSTMENT

A trap is provided in the tuner for the prupose of reducing any interference on Channel 2 in the IF Strip which might which might be caused by operation of nearby transmitters in the 40MC band.
Tune the set to receive a TV station on Channel 2. If interference is noted adjust A30 to minimize it. If no interference is noted turn A30 fully clockwise.

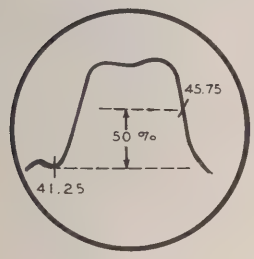


FIG. 1

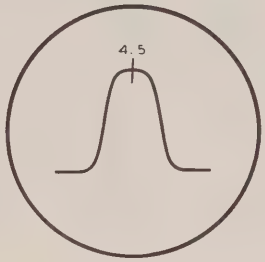


FIG. 2

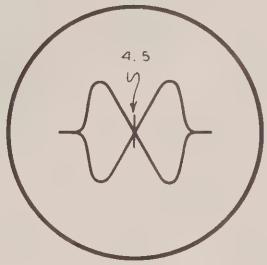


FIG. 3

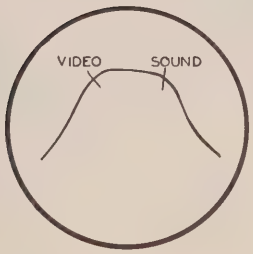


FIG. 5

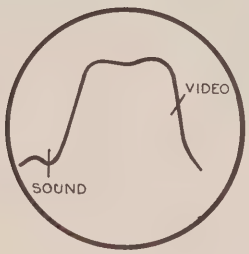
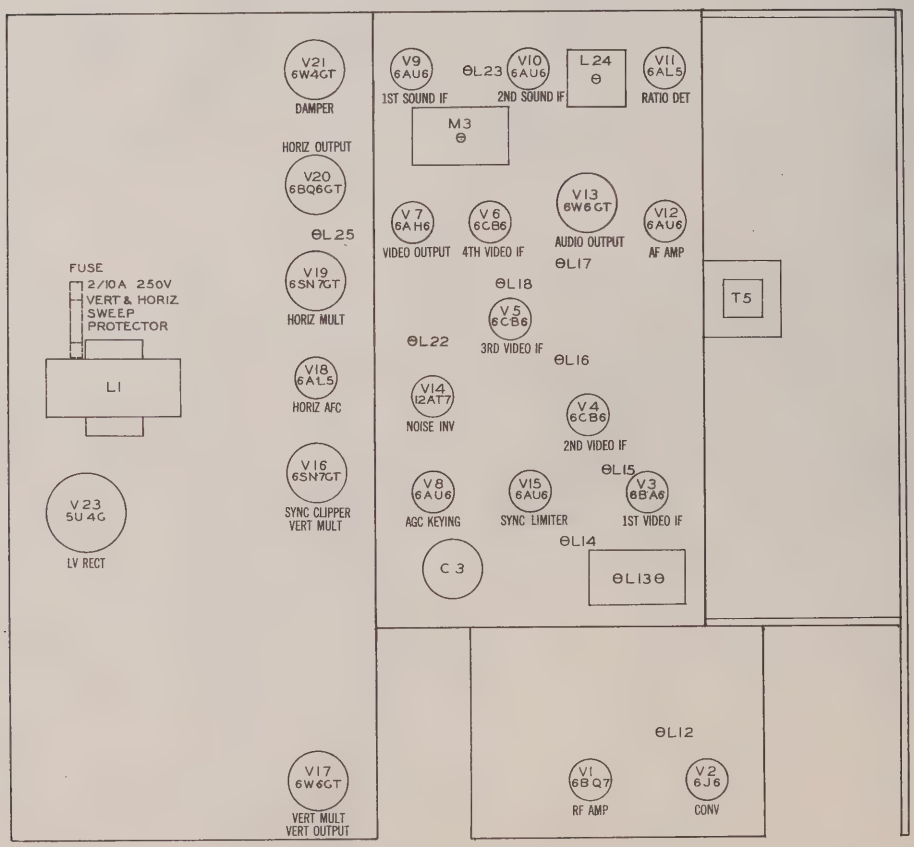


FIG. 4

RESISTANCE MEASUREMENTS

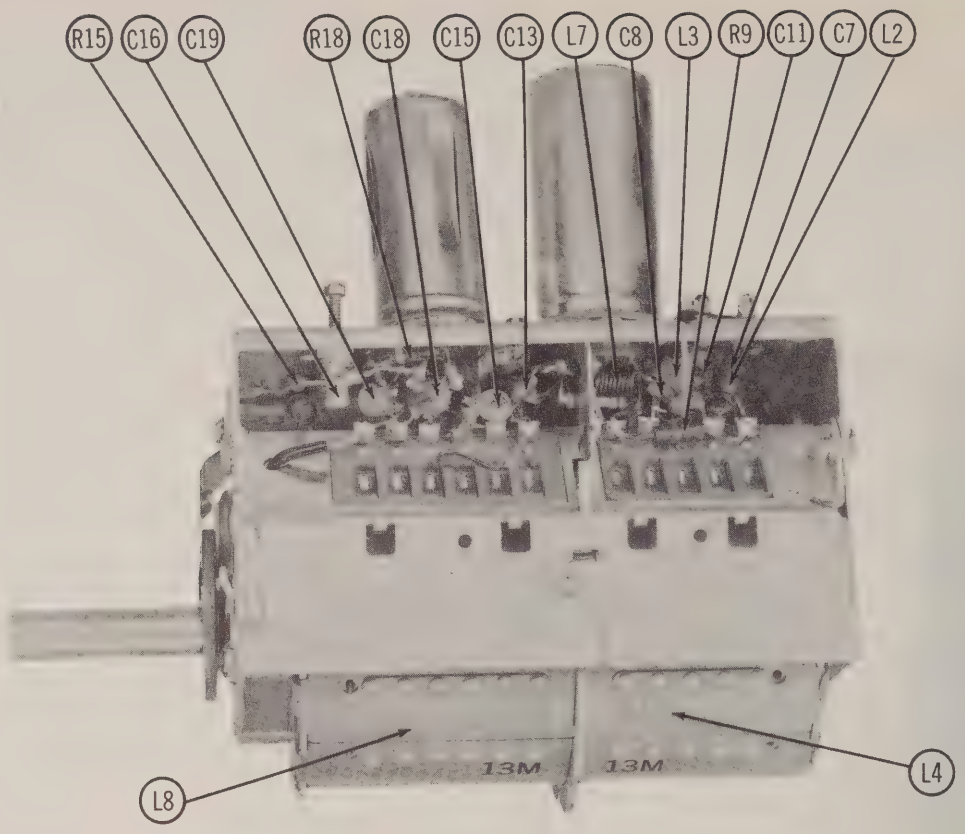
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	700KΩ	0Ω	.1Ω	0Ω	†160KΩ	†280KΩ	INF	0Ω
V 2	6J6	■4.8KΩ	■15KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6BA6	†120KΩ	†160KΩ	■.1Ω	■0Ω	†570Ω	†570Ω	†160KΩ		
V 4	6CB6	5IKΩ	47Ω	0Ω	.1Ω	■2.7KΩ	■2.7KΩ	0Ω		
V 5	6CB6	2.6KΩ	2.7KΩ	.1Ω	0Ω	■22KΩ	■22KΩ	2.6KΩ		
V 6	6CB6	■22KΩ	■22KΩ	■.2Ω	■.1Ω	†800Ω	†800Ω	■22KΩ		
V 7	6AH6	4.7KΩ	0Ω	0Ω	.1Ω	■5.4KΩ	■220KΩ	20Ω		
V 8	6AU6	■35KΩ	■0Ω	■0Ω	■.1Ω	270KΩ	†330Ω	■0Ω		
V 9	6AU6	2.8Ω	0Ω	0Ω	.1Ω	■15KΩ	■15KΩ	220Ω		
V 10	6AU6	47KΩ	0Ω	0Ω	.1Ω	2.2KΩ	2.2KΩ	0 Ω		
V 11	6AL5	INF	INF	0Ω	.1Ω	0Ω	0Ω	12KΩ		
V 12	6AU6	10Meg	0Ω	0Ω	.1Ω	†290KΩ	†1.2Meg	10Ω		
V 13	6W6GT	†68KΩ	■.1Ω	†188Ω	†4.2KΩ	†290KΩ	†330Ω	■.2Ω	■150Ω	
V 14	12AT7	■0Ω	■19K Ω	■220KΩ	0Ω	0Ω	■520KΩ	2.2Meg	5KΩ	.1Ω
V 15	6AU6	2.2Meg	33KΩ	0Ω	.1Ω	■31KΩ	■0Ω	33KΩ		
V 16	6SN7GT	■31KΩ	†3KΩ	25KΩ	1.9Meg	#2.9Meg	0Ω	0Ω	.1Ω	
V 17	6W6GT	INF .	.1Ω	†3.4KΩ	†3.4KΩ	2.9Meg	680KΩ	0Ω	68Ω	
V 18	6AL5	33KΩ	33KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 19	6SN7GT	5.1Meg	#27KΩ	1.5KΩ	80KΩ	#380KΩ	1.5KΩ	.1Ω	0Ω	
V 20	6BQ6GT	INF	.1Ω	INF	†28KΩ	470KΩ	470KΩ	0Ω	100Ω	TopCap #86Ω
V 21	6W4GT	INF	INF	220KΩ	INF	†340Ω	INF	■.1Ω	■0Ω	
V 22	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TopCap #466
V 23	5U4G	†155Ω	35KΩ	0Ω	27Ω	120KΩ	29Ω	■19KΩ	35KΩ	
V 24	21FP4A	0Ω	350KΩ	Pin 6 1.4Meg	Pin 10 #47KΩ	Pin 11 ■225KΩ	Pin 12 .1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V23
# MEASURED FROM PIN 3 OF V21
■ MEASURED FROM 150 VDC LINE

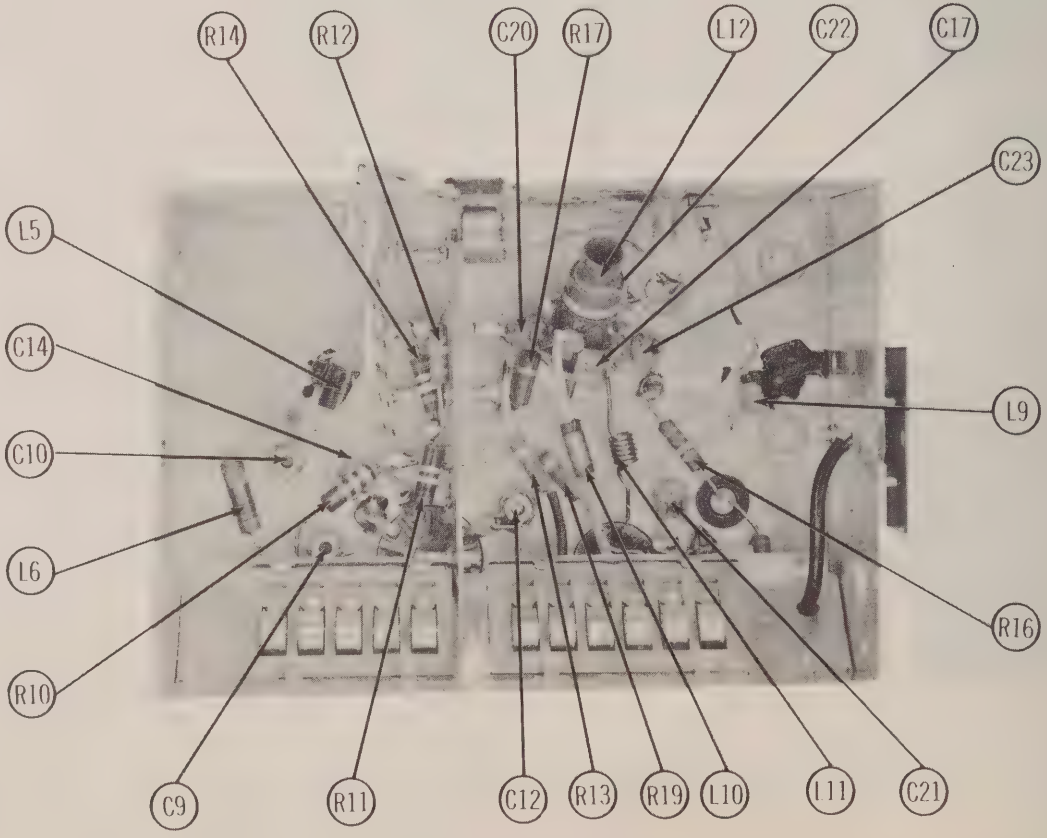


BOTTOM VIEW

TUBE PLACEMENT CHART

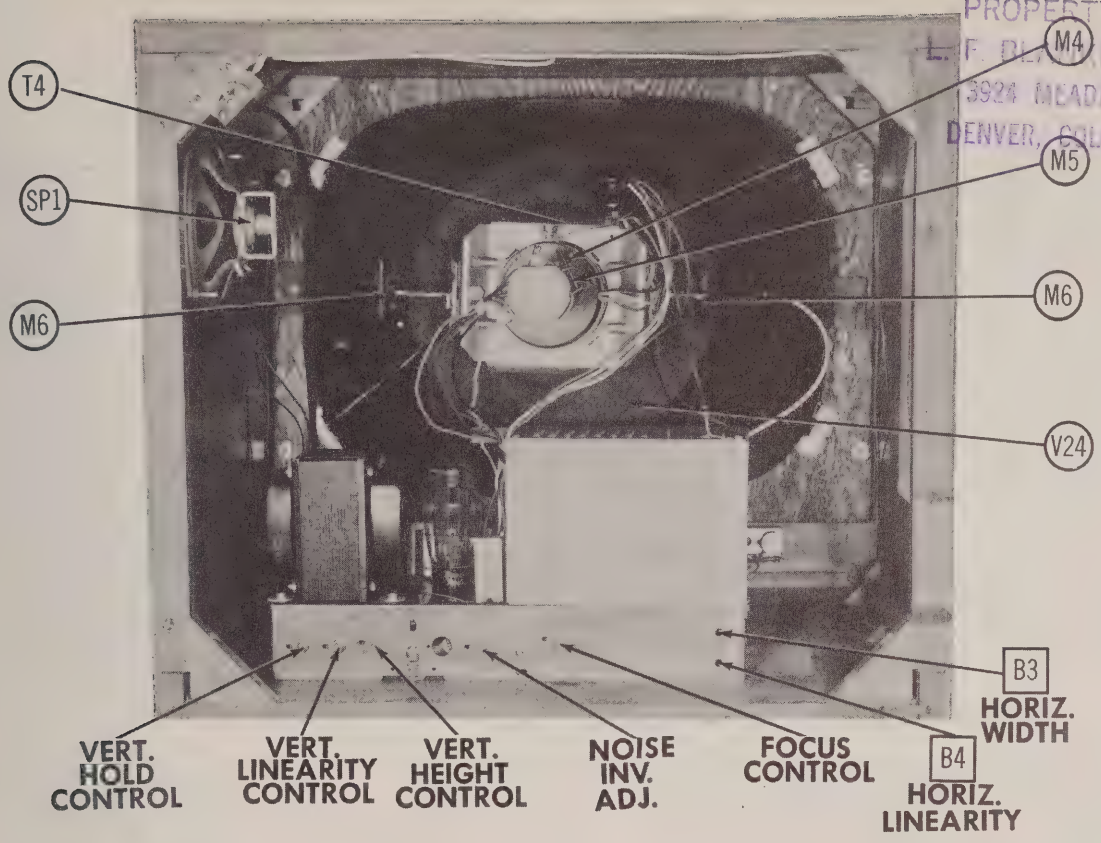


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern .
Set the horizontal hold control at the middle of its range.
Set the contrast control for normal operation.
Adjust the horizontal oscillator slug (B1) until the picture synchronizes horizontally.
Turn the horizontal hold control to each extreme end of its rotation to see that the sync range is centered.
If necessary, slight readjustment of B1 should give the desired effect.
Set the channel selector switch to a point between any two channels.
Set the contrast control fully counter clockwise.
Connect the DC probe of a VTVM to pin 8 (Cathode) of 6BQ6GT (V20). Connect the common lead to chassis.
Turn the horizontal drive trimmer (B2) clockwise, not allowing the voltage on VTVM to exceed 15 volts. (On some sets this much voltage may not be obtained.)
The correct adjustment of B2 may then be reached by turning B2 counter clockwise while observing the VTVM reading. There will be a rapid voltage drop of approximately 1½ volts to a point where further rotation of B2 will cause only a slight decrease in voltage reading. This point is the proper setting of B2.
Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture horizontally.
Adjust the Horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

NOISE INVERTER CONTROL ADJUSTMENT

The noise inverter control is factory adjusted for optimum performance.
If it becomes necessary to adjust same, tune in the strongest TV signal available.
Turn contrast control fully clockwise. Starting at maximum counter clockwise position, turn the noise inverter control clockwise until a slight horizontal shift of the picture is noted, then back off 1/8 of a turn.

ANTI-PIN CUSHIONING MAGNET ADJUSTMENT

Move the raster slightly off center until the side of the picture to be straightened can be seen.
The double hinge on the mounting brackets permit the anti-pin cushioning magnets to be moved either forward or backward to the point where minimum pin cushioning is obtained.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Remove 10 wood screws. Remove rear cover.
3. Disconnect speaker and built-in antenna.
4. Remove 2 wood screws. Remove antenna bracket.
5. Remove 2 speaker nuts. Remove speaker.
6. Disconnect Deflection Yoke Plug, HV Lead, CRT Socket and Grd. Strap.
7. Remove 5 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PROPERTY OF
L. F. BLANKENSHIP

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V3	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp	6BA6	6BA6	7BK	
V4	2nd. Video IF Amp	6CB6	6CB6	7CM	
V5	3rd Video IF Amp	6CB6	6CB6	7CM	
V6	4th. Video IF Amp	6CB6	6CB6	7CM	
V7	Video Output	6AH6	6AH6	7BK	
V8A	AGC Keying	6AU6	6AU6	7BK	
B	AGC Keying	6AG5	6AG5	7BD	
V9	1st. Sound IF Amp.	6AU8	6AU8	7BK	
V10	2nd. Sound IF Amp	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier	6AU6	6AU6	7BK	
V13	Audio Output	6W6GT	6W6GT	7AC	
V14	Noise Inverter	12AT7	12AT7	9A	
V15A	Sync Limiter	6AU6	6AU6	7BK	
B	Sync Limiter	6AG5	6AG5	7BD	
V16	Sync Clipper-Vert. Mult.	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6W6GT	6W6GT	7AC	
V18	Horz. AFC	6AL5	6AL5	6BT	
V19	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BQ6GT	6BQ6GT	9AM	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V24	21FP4 A	21FP4A	I2C	① Circuit changes necessary
		21FP4 ①	I2C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	+80	450	AH287005-8	AFH3-46		UPT84245		FP378	TVL-3792	
B	+40	450								
C	+10	450								
C2A	+80	450	AH287005-8	AFH3-46		UPT84245		FP378	TVL-3792	
B	+40	450								
C	+10	450								
C3A	+100	200	AH287005-10	AFH4-41		UPT415		FP385	TVL-3762	
B	+40	200								
C	+10	200								
C4	10	50	CH287024-16	PRS50/10		BR105		TC32	TVA-1304	
C5	2	50	Ch287024-17	PRS150/4		BBR-2-50Y		TC302	TVA-1301	
C6	10	50	CH287024-16	PRS50/10		BR105		TC32	TVA-1304	
C7	68		CH287032-37	S168	D6-680		GP1K-680	UC-5468	5GA-Q68	
C8	68		CH287032-37	S168	D6-680		GP1K-680	UC-5468	5GA-Q68	
C9	3-8				829-10					
C10	3-8				829-10					
C11	3.3		CH287044-033	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5433	5TCCB-V33	
C12	5-3				829-3			CT565A		
C13	120		AH276685	SI120	D6-121	TM5T12	GP2K-121	UC-5313	5GA-T12	
C14	1000		CH287032-17	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C15	47		CH287032-3	S147	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C16	5-3				829-3			CT565A		
C17	1000		CH287032-17	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	10		CH287038-17	SU10NP0	TCZ-10		NP0K-100	ZT-541	5TCCB-Q1	
C19	5		CH287032-21	S15N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C20	1000		CH287032-17	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C21	1000		CH287032-17	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	10		CH287038-17	SU10	D6-100		GP1K-100	UC-541	5GA-Q1	
C23	68		CH287032-37	S168	D6-680		GP1K-680	UC-5468	5GA-Q68	
C24	2		CH287044-020		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C25	82	500	CH287517-820							
C26	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C27	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C28	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C29	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C30	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C31	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C32	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C33	5		CH287044-047	S15NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C34	82	500	CH287517-820							
C35	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C36	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C37	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C38	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C39	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C40	.047	200	CH287056-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C41	82	500	C H287598-820							
C42	47	200	CH287056-472	P288-47		P73P5		PT405	2TM-P47	
C43	5000		AH287037-502	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C45	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C46	1000	500	CM24A103K	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C47A	4000		CH287052-402	BPD-4X004	D6-402	TM5DD4	832-004	DCD-524	5HK-3D4	
B	4000				D6-402					
C48	22		LH287052-1	SI22	D6-220	5W5Q25	GP1K-220	UC-5422	5GA-Q22	
C49	5000		AH287037-502	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C50	1000		LH287032-17	S1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C51	.0027	400	AH287059-272	P688-003	D6-272	PTE6D3	GP2-333-272	PT623	6TM-D3	
C52	.0022	400	CH287036-222	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C53	.01	400	CH287036-103	P688-01	D6-103	PTE6S1	GP2-333-103	PT601	6TM-S1	
C54	.0047	400	CH287059-472	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C55	.047	200	CH287056-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C56	.5	400	CH287036-474	484-5		P24P5		PT405	4TM-P5	
C57	.22	400	CH287036-224	P488-22		PTE4P22		PT4023	4TM-P23	
C58	680		LH276032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C59	5000		AH287037-502	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C60	20000		AH287037-203	S1D0003	DF-203				5HK-S2	
C61	.047	200	CH287056-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C62	.47	200	LH287036-474	P288-47		PJ2P5		PT405	2TM-P47	
C63A	4000		CH287052-402	BPD-2X004	D6-402	TM5DD4	832-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C64	.047	400	CH287055-473	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C65	.047	400	CH287055-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C66	.047	600	CH287055-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C67	.033	600	CH287055-333	P688-033		PTE6S3		PT6133	6TM-S3	
C68	1000	500	CM24A102K	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C69	1000	500	CM24A102K	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C70	2700	500	CM24A272K							
C71	.0033	600	CH287035-332	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D3	
C72	.22	200	CH287056-224	P488-22		PTE4P22		PT4025	2TM-P22	
C73	.001	400	CH287036-102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C74	.001	600	CH287036-102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C75	.0047	400	CH287059-472	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C76	.0068	600	CH287055-682	P688-0068	D6-682	PTE6D68	GP2-333-682		6TM-D68	
C77	.0056	400	CH287059-562				GP2-333-562	PT6256		
C78	.047	200	CH287058-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C79	3900	500	CM24J392K	1464-004		iDRD5D4		MC3463	MS-24	
C80	390	500	CM22A391K	1469-0004		SR574		MC3243	MS-34	
C81	.22	400	CH287038-224	P488-22		PTE4P22		PT4025	4TM-P22	Note
C82	330	500	CM22A331K	1469-00035						
C83	470		LH287032-8	S1470	D6-471		GP3K-471	UC-5347	5GA-T47	
C84	.047	400	CH287055-473	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C85	.01	600	CH287055-103	P688-01		PTE6S1		PT611	6TM-S1	
C86	.1	600	CH287055-104	P688-1		PTE6P1		PT601	6TM-P1	
C87	68		LH287032-37							
C88	.0002$	12500	CH287051-2						12TVM-325	
C89	.47	200	CH287036-472	P288-47		PJ2P5		PT405	2TM-P47	
C90	.5	400	CH287036-473	485-5		PJ4P5		PT405	4TM-P5	
C91	680		LH287032-9	S1680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	

Note : Some Models use 10MFD in this application (Part #CH287024-14)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	100KΩ		LH262045-1				UF15L	Brightness-Panel
B	1200Ω						UR15ZL	Contrast-Rear
R2A	30KΩ		CH262022-4	Q11-121	AG-42-S	B-26	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	1	CH262041-2	Q10-133X	AT-90	BT-65-S	UT-43L	Volume-Tapped② 300KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
C	Switch		Not Req.	SW-A	76-1	Not Req.	US-26	Attach to R3A
R4A	3 Meg		CH262025-7	Q11-140	AG-85-S	AB-B4	SU-59	Focus-Note 1
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	1 Meg		CH262025-7	Q11-140	AG-85-S	AB-B4	SU-59	Height-Note 1
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	10KΩ		CH262024-15	Q11-116	AG-27-S	AB-14	SU-20	Noise Inverter
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Not Req	Attach to R6A
R7A	600KΩ		CH262025-10	Q11-136	AG-58-S	AB-59	SU-50	Vert Linearity-Note 2
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	1.5Meg		CH262025-4	Q11-128	AG-83-S	AB-75	U-155	Vert Hold-Note 3
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Not Req.	Attach to R8A

Note 1 Some models use alternate control (Part No. CH262025-13)
Note 2 Some models use alternate control (Part No. CH262025-13)
Note 3 Some models use alternate control (Part No. CH262025-14)

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R9	15KΩ		RC23A153K		
R10	47KΩ		RC23A473K		
R11	100KΩ		RC23A104K		
R13	330KΩ		RC23A334K	BTS-330K	
R12	470Ω		RC23A471K	BTS-470	
R14	180KΩ		RC23A184K		
R15	15KΩ		RC23A153K		See Note
R16	220KΩ		RC23A224K		
R17	15KΩ		RC23A153K		
R18	10KΩ		RC23A103K		
R19	470Ω		RC23A471K	BTS-4700	
R20	150Ω		RC23A151K	BTS-150	
R21	470Ω		RC23A471K	BTS-470	
R22	620KΩ-5%		RC23A624K	BTS-620K-5%	
R23	47KΩ		RC23A473K	BTS-47K	
R24	680KΩ		RC23A684K	BTS-680K	
R25	3.9Meg-5%		RC23A395J	BTS-3.9Meg-5%	
R26	1 Meg-5%		RC23A105J	BTS-1 Meg-5%	
R27	1 Meg-5%		RC23A105J	BTS-1 Meg-5%	
R28	180KΩ		RC23A184K		
R29	6800Ω-5%		RC23A682J		
R30	330KΩ		RC23A334K		
R31	68Ω-5%		RC23A334K		
R32	2200Ω		RC24A222K	BTA-2200	
R33	220KΩ		RC23A224K		
R34	3300Ω-5%		RC23A332J	BTS-3300-5%	
R35	100Ω		RC23A101K	BTS-100	
R36	680Ω		RC23A681K	BTS-680	
R37	47Ω		RC23A470K		
R38	2700Ω		RC24A272K	BTA-2700	
R39	2200Ω		RC23A222K	BTS-2200	
R40	470Ω		RC23A471K	BTS-470	
R41	10KΩ-5%		RC23A103J		

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R42	82Ω		RC23A820K	BTS-82	
R43	3300Ω-5%		RC23A332J	BTS-3300-5%	
R44	22KΩ		RC23A223K		
R45	150Ω		RC23A151K	BTS-150	
R46	470Ω		RC23A471K	BTS-470	
R47	2.2Meg		RC23A225K	BTS-2.2Meg	
R48	1500Ω		RC23A152K	BTS-1500	
R49	1700Ω	1	RC24A272K	BTA-2700	
R50	2700Ω	1	RC24A272K	BTA-2700	
R51	220KΩ		RC23A224K	BTS-220K	
R52	330KΩ		RC23A334K	BTS-330K	
R53	5KΩ-5%		RC23A512J	BTS-5K-5%	
R54	68KΩ-5%		RC23A683J	BTS-68K-5%	
R55	150KΩ		RC23A154K	BTS-150K	
R56	33KΩ		RC23A333K	BTS-33K	
R57	220Ω		RC23A221K	BTS-220	
R58	15KΩ		RC23A153K	BTS-15K	
R59	47KΩ		RC23A473K	BTS-47K	
R60	33Ω		RC23A330K		
R61	47KΩ		RC23A473K	BTS-47K	
R62	12KΩ		RC23A123K	BTS-12K	
R63	47KΩ		RC23A473K	BTS-47K	
R64	10Meg		RC23A106K	BTS-10Meg	
R65	10Ω		RC23A100K		
R66	1.2Meg-5%		RC23A125J	BTS-1.2Meg-5%	
R67	220KΩ		RC23A224K	BTS-220K	
R68	68KΩ		RC23A683K	BTS-68K	
R69	15ΩΩ	1	RC24A15K	BTA-150	
R70	56KΩ	2	RC35A563K	BTS-56K	
R71	3900Ω	1	RC24A392K	BTA-3900	
R72	390Ω		RC23A391K	BTS-390	
R73	15KΩ	2	RC35A153K	BTS-15K	
R74	22KΩ		RC23A223K	BTS-22K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R75	100KΩ		RC23A10 3K	BTS-100K	
R76	220KΩ		RC23A224K	BTS 220K	
R77	470KΩ		RC23A474K	BTS 470K	
R78	2.2Meg		RC23A225K	BTS-2 2Meg	
R79	33KΩ		RC23A333K	BTS-33k	
R80	47KΩ		RC23A473K	BTS 47K	
R81	100KΩ		RC23A104K	BTS-100K	
R82	6200Ω		RC23A622K	BTS-6200	
R83	4700Ω-5%		RC23A472J	BTS-4700-5%	
R84	12KΩ		RC23A123K	BTS-12K	
R85	2700Ω		RC23A272K	BTS-2700	
R86	39KΩ		RC23A393K	BTS-39K	
R87	15KΩ		RC23A153K	BTS-15k	
R88	33KΩ		RC23A103K	BTS-10K	
R89	33KΩ		RC23A333K	BTS-33K	
R90	3300Ω		RC23A332K	BTS-3300	
R91	33KΩ-5%		RC23A333J	BTS-33K-5%	
R92	68Ω		RC23A680K		
R93	2.2Meg		RC23A225K	BTS-2.2Meg	
R94	470KΩ		RC23A474K	BTS-470K	
R95	680KΩ		RC23A684K	BTS 680K	
R96	470KΩ		RC23A474K	BTS-470K	
R97	2200Ω	2	RC25A222K	BTS-2200	
R98	33KΩ	2	RC25A333K	BTS-33K	

Note-Some models use a 22KΩ resistor in this application.

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R99	100KΩ		RC23A104K	BTS-100K	
R100	100KΩ		RC23A104K	BTS-100K	
R101	4 7Meg-5%		RC23A475J	BTS-4.7Meg-5%	
R102	470KΩ		RC23A474K	BTS-470K	
R103	1500Ω		RC23A152K	BTS-1500	
R104	5600Ω		RC 24A562K	BTA-5600	
R105	68KΩ		RC23A683K	BTS-68K	
R106	330KΩ		RC23A334K	BTS-330K	
R107	22KΩ	2	RC25A223K	BTS-22K	
R108	5600Ω	2	RC25A562K	BTS-5600	
R109	100Ω		RC23A101K		
R110	470KΩ		RC23A474K	BTS-470K	
R111	100Ω	2	RC25A101K	BW-2-100	
R112	5600Ω	2	RC25A562K	BTS-5600	
R 13	33KΩ		RC24A333K	BTA-33K	
R114	47KΩ		RC23A473K	BTS-47K	
R115	22KΩ	2	RC25A223K	BTS-22K	
R118	2.2Ω		CH268000-022		
R117	680KΩ	2	RC25A684K		
R115	12KΩ		RC23A474K	BTS-470K	
R 17	175Ω	7.5	K H268016-4	1 3/4A-200	
R118	220KΩ		RC24A224K	BTA-220K	
R121	47KΩ		RC23A473K	BTS-47K	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
T1	117VAC ① 1.9A	725VCT .190ADC	5VAC ③ 3A	6.3VAC ④ 2.2A SEC. 4 6.3VAC ⑤ 8.2A	NH265048-1	P-8170 ⑪		TP-360 ②	R-35A

① Drill new mtg. holes.
② Use universal mtg. bracket.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No	NOTES
T2	466Ω tap ⑥ 86Ω	12Ω tap④ 2.0, 3Ω SEC 2 0Ω	NH265051-1			TY-6		Horiz. Output Trans.
T3	880Ω	10Ω	LH285072-5	A-8112	A-3036	T90-5 ①	A-98X ①	Vert. Output Trans.
T4A	22.2		NH285060-1		MD2-71 ②	TY-6 ③	Y-19 ③	Horiz. Deflection Coils
B	85Ω							Vert. Deflection Coils

① Drill one new mtg. hole
② Use original Deflection Network

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No	NOTES
T5	4.3KΩ	3.4Ω	188Ω	.48Ω	LH-265071-9 LH-265071-10①	A-3877 ②	A-2930 ③	RO-8 ④	S-6X	① Alternate Output Transformer ② Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C IMP	REPLACEMENT DATA: BENDIX PART No	REPLACEMENT DATA: JENSEN PART No	REPLACEMENT DATA: QUAM PART No	NOTES
SP1	6"	PM	3.4Ω	LH-257004 J LH256304 3 LH256004-1 LH256012 4 ①	ST-10s Mod. P6-X	624	① Alternate 6 PM Speaker ② 10" PM Speaker used in Models 21K3 & OAK. ③ 12" PM Speaker used in Model 21KD

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D C RESISTANCE	RATINGS: INDUCTANCE (@ CURRENT (000 ^))	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No
L1	.150A	155Ω	4 Hy.	LH265047-3	C-2309 ①			

① Drill one new mtg. hole.

BENDIX
MODELS OAK3, 21K3, 21KD, 21T3, 21X3

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

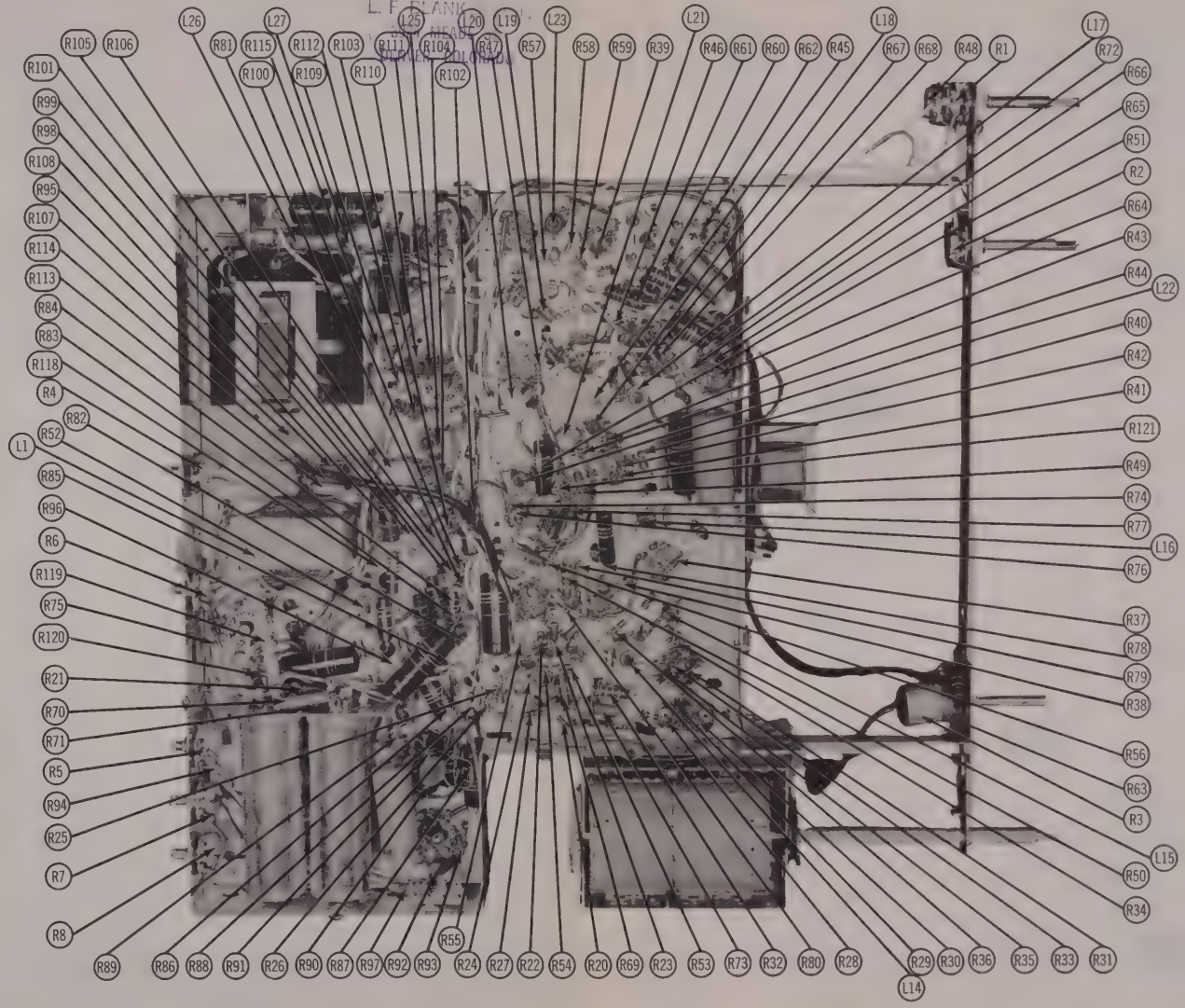
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	BENDIX PART No.	MERIT PART No.	
L2	FM Trap	0Ω				
L3	FM Trap	0Ω				
L4	Ant. Coils	0Ω				
L5	Fil. Choke	0Ω				
L6	Grid Choke	1.5Ω				
L7	Neutralizing Coil	0Ω				
L8	RF, Mixer Grid & Osc. Coil	0Ω				
L9	Fil. Choke	0Ω				
L10	Feedback Coil	1.1Ω				
L11	RF. Choke	0Ω				
L12	Converter Plate	.1Ω				
L13	1st. Video IF	.1Ω		NH259138-1		Includes Trap
L14	Sound Trap	0Ω		CH259146-1		
L15	2nd. Video IF	.1Ω	.1Ω	LH259144-1		
L16	3rd. Video IF	.1Ω	.1Ω	LH259145-1		
L17	Adj. Channel Picture Trap	0Ω		CH259147-1		
L18	4th. Video IF	.1Ω		CH259148-1		
L19	Fil. Choke	0Ω		CH259149-1		
L20	Series Peaking Coil	14Ω		CH259105-7		Wound on 22K resistor
L21	Shunt Peaking Coil	14Ω		CH259105-4	TV-185	270 Microhenries
L22	4.5MC Trap	.85Ω		LH259108-1	TV-151	
L23	2nd. Sound IF	2.4Ω		CH259136-2		
L24	Ratio Det.	5.5Ω	.4Ω CT	NH259115-2		Tertiary Winding -.6Ω
L25	Horiz. Osc.	50Ω		LH259121-1	TV-163	
L26	Horiz. Lin.	37Ω		LH259082-5	MWC-1	
L27	Width Coil	5.5Ω		LH259114-1	MWC-2	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	MDV	2/10 250V	CH266164-5201		315.200		MDV-2/10	

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	RF Tuner	RH258050	
M3	5th. Video IF Crystal		1N60
	1st. Sound IF Capacitor	CH267044-033	3.3MMF
	Capacitor	CH267044-018	1.8MMF
	RF Choke	CH259120-5	Video Det. Assy. Part #NH259142-1
	Resistor	RC23A472J	4.7KΩ
	RF Choke	CH259150-1	
	Centering Magnet	NH274240-1	
	Ion Trap	NH274197-8	
	Magnets	CH251227-1	Anti-Pin Cushion Correction (2 Required)
B2	Trimmer	CH260009-10	Horiz. Drive (20-270MMF)
	Knob	LH269079-1	Channel Selector
	Knob	LH269078-1	Fine Tuning
	Knob	LH269077-1	Contrast
	Knob	LH269076-1	Brightness
	Knob	LH269080-1	Off/on Volume & Horiz. Hold
	Back Cover	CH251212-1	Includes Line Cord
	Mask & Gasket Assy	LH269068-1	Models 21T3, 21K3 & 21KD
	Mask & Gasket Assy	LH269068-2	Models OAK3 & 21X3
	Safety Glass	NH257608	22"x13/32"x 16-9/16"
	Cabinet	RH255117-1	Table Model - Mahogany (Model 21T3)
	Cabinet	RH255117-2	Table Model - Blonde (Model 21X3)
	Cabinet	RH255118-1	Console -Blonde Oak (Model 21K3)
	Cabinet	RH255118-2	Console w/doors - Mahogany (Model 21KD)
	Cabinet	RH255119-1	Console - Blonde (Model OAK3)

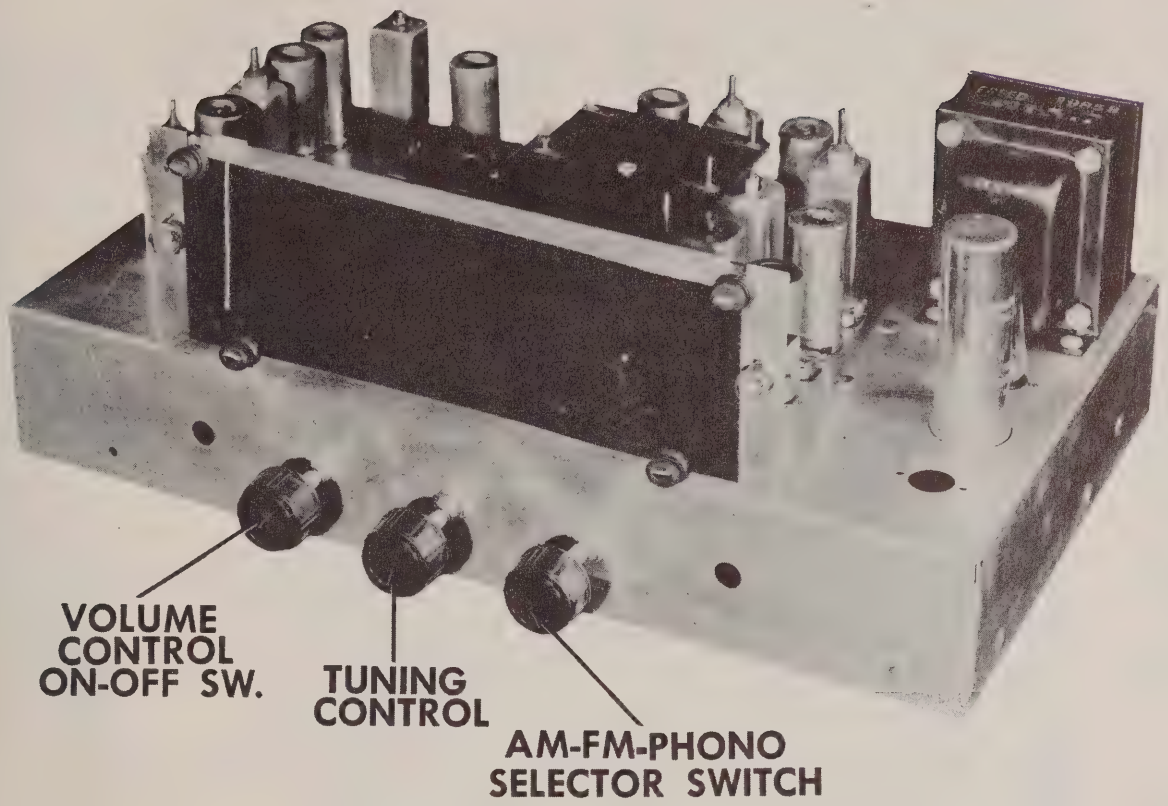


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

BROOKS MODEL ST-14A

L. F. BLA...
3924 MEADE ST
DENVER, COLORADO

BROOKS
MODEL ST-14A



BROOKS
MODEL ST-14A

TRADE NAME	Brooks Model ST-14A
MANUFACTURER	Brooks Electronic Labs., Inc., 621 Main St., Waltham, Mass.
TYPE SET	AC Operated AM-FM Superheterodyne Tuner For Custom Installation
TUBES (FOURTEEN)	Types 6CB6 FM RF Amp., 6BE6 FM Mixer, 6J6 FM Osc., (3) 6CB6 FM IF Amp., (2) 6AU6 Limiter, 6AL5 Discriminator, 6BA6 AM RF Amp., 6BE6 AM Conv., 6BA6 AM IF Amp., 6AL5 AM Det., 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .3 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540-1640 KC FREQ. MOD. 87-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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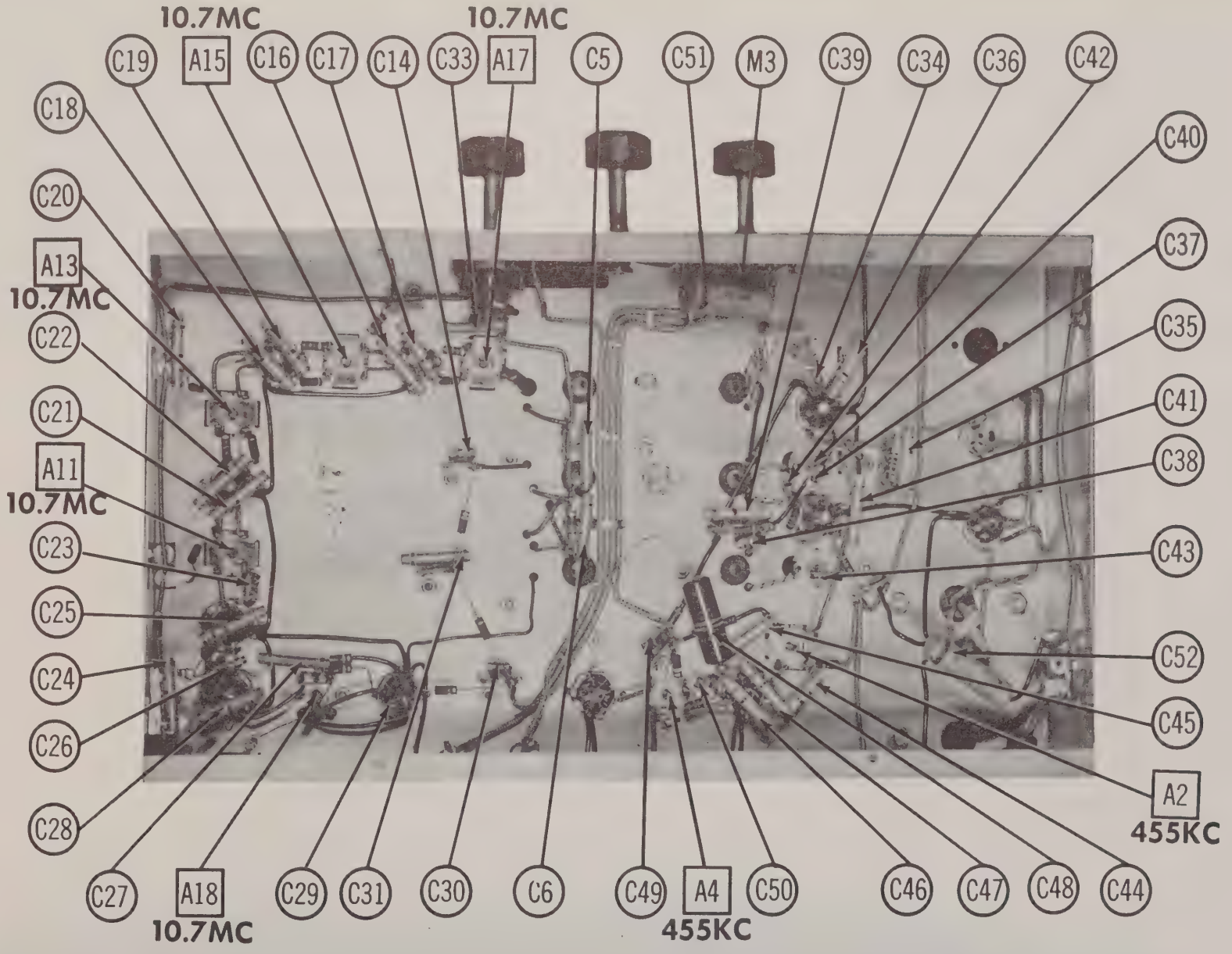
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C17
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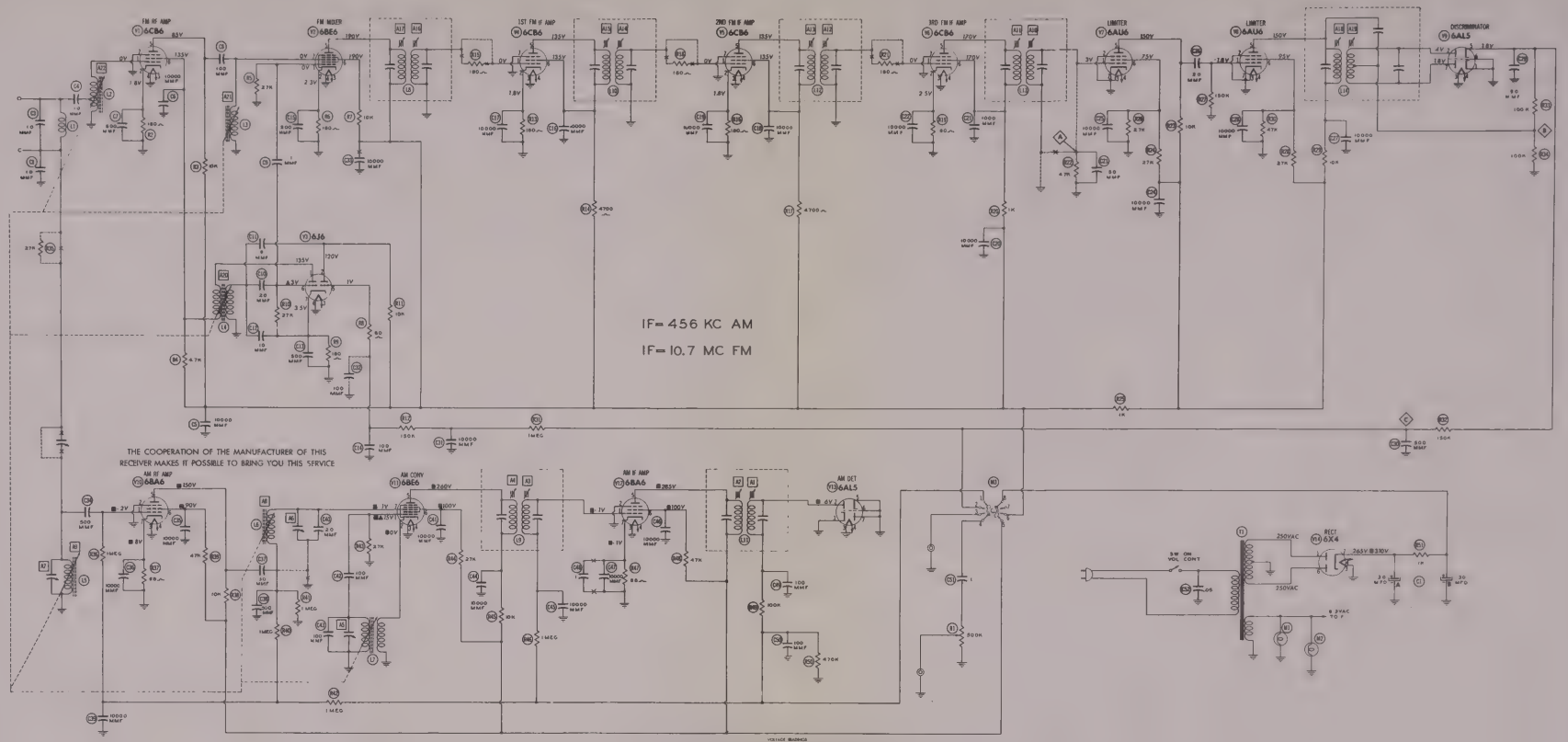

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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183-3

AM ALIGNMENT

Turn tuning knob counter clockwise to end of slug carriage travel and set pointer so pointer saddle is 7/8" from left hand end of dial back plate.
Turn dial pointer to 1600KC and set the bottoms of all tuning slugs 1 $\frac{1}{2}$" from the underside of the coil forms.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V11) Low side to chassis.	456KC	AM	1600 KC	Across voice Coil	A1, A2, A3, A4	Connect tuner output to audio amplifier. Adjust for maximum output.
2.	"	High side to right hand antenna terminal (set viewed from rear). Low side to chassis.	1600 KC	"	"	"	A5, A6 A7	Adjust in order given for maximum output.
3.	"	"	1340 KC	"	1340 KC	"	A8, A9	Set tuner dial to 1340 KC, then tune generator to maximum signal. Adjust A6 and A7 for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to pin 7 (grid) of 6BE6 (V2). Low iside to chassis	10.7MC (Unmod)	FM	Point of mon-interference.	DC probe thru 1 Meg to point (A). Common to chassis	A10, A11, A12, A13, A14, A15, A16, A17	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A18	"
6.	"	"	"	"	"	DC probe to point (C). Common to chassis.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to pin 7 (grid) of 6BE6 (V2) Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. amp. thru 1Meg to point (A). Low side to chassis.	A10, A11 A12, A13 A14, A15 A16, A17	Adjust for curve of maximum amplitude and symmetry with center at 10.7MC as in fig. 1. Attenuate generator to avoid distortion of response curve.
5.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A18, A19	Adjust A18 for crossover lines of maximum straightness and amplitude. Adjust A19 so that 10.7MC occurs at center of crossover lines. SLIGHTLY retouch A18 for maximum amplitude and straightness of lines. Continue alignment with Step 7.

FM RF ALIGNMENT

Connect a short across C31 to chassis to disable the AFC.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω Carbon Resistor	High side thru 270Ω to right hand antenna terminal. Low side to left hand terminal.	100MC. (Unmod.)	FM	100MC	DC probe thru 1Meg to point (A). Common to chassis.	A20	Adjust for maximum deflection.
8.	"	"	"	"	"	"	A21, A22	Attenuate generator for output below that necessary for limiting at point (A). Adjust A21 and A22 for maximum deflection.

FIG. 1

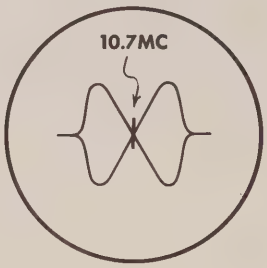


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BROOKS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	FM RF Amplifier	6CB6	6CB6	7CM	
V2	FM Mixer	6BE6	6BE6	7CH	
V3	FM Oscillator	6J6	6J6	7BF	
V4	1st. FM IF Amp.	6CB6	6CB6	7CM	
V5	2nd. FM IF Amp.	6CB6	6CB6	7CM	
V6	3rd. FM IF Amp.	6CB6	6CB6	7CM	
V7	Limiter	6AU6	6AU6	7BK	
V8	Limiter	6AU6	6AU6	7BK	
V9	Discriminator	6AL5	6AL5	6BT	
V10	AM RF Amplifier	6BA6	6BA6	7BK	
V11	AM Converter	6BE6	6BE6	7CH	
V12	AM IF Amplifier	6BA6	6BA6	7BK	
V13	AM Detector	6AL5	6AL5	6BT	
V14	Rectifier	6X4	6X4	5BS	

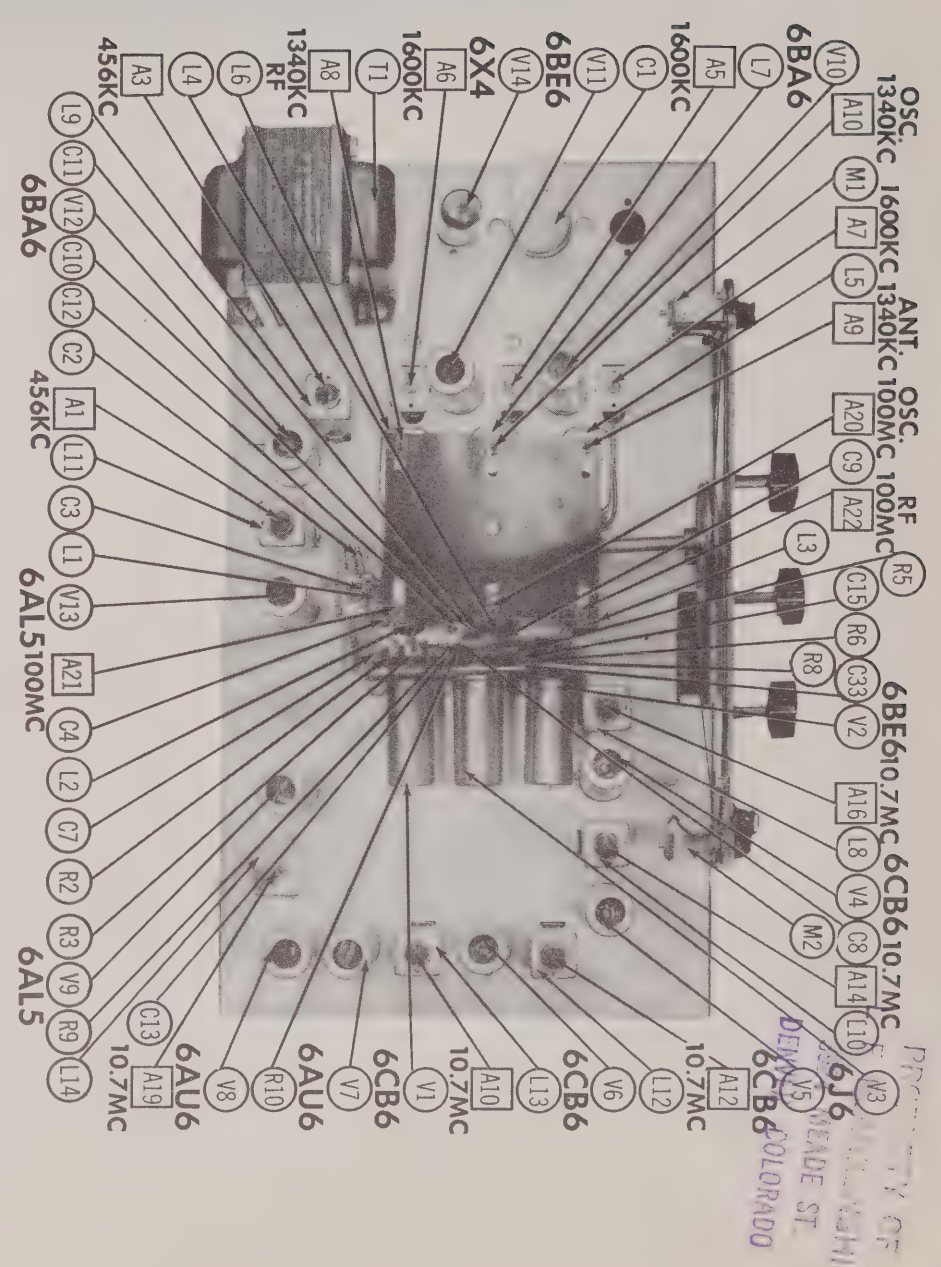
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BROOKS PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■30	350		AFH2-39		UP3335		FP227.3	TVL-2621	
B	▲30	350								
C2	10			SI10NP0	TCZ-10	5R5Q1	NP0K-200	ZT-541	5TCC-Q1	
C3	10			SI10NP0	TCZ-10	5R5Q1	NP0K-200	ZT-541	5TCC-Q1	
C4	10			SI10NP0	TCZ-10	5R5Q1	NP0K-200	ZT-541	5TCC-Q1	
C5	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C6	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C7	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C8	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C9	1				TCZ-1		NP0K-010			
C10	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C11	6						NP0K-060			
C12	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C13	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C14	100						N150L-101			
C15	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C16	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C17	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C18	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C19	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C20	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C21	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C22	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C23	50			SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C24	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C25	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C26	20			SI20NP0	TCZ-20		NP0K- 200	ZT-542	5TCC-Q2	
C27	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C28	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C29	50			SI50	D6- 500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C30	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C31	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C32	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	Note 1
C33	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C34	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C35	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C36	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C37	50			SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C38	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C39	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C40	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C41	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C42	100			SI100N750	TCN-100		N750L-101	NT-531	5TCU-T1	
C43	100			SI100N750	TCN-100		N750L-101	NT-531	5TCU-T1	
C44	10000			SI100000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C45	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C46	10000			SI10000	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C47	10000			SI10000	D6-103	TM5S1	GP2-33 3-103	DC-511	5HK-S1	
C48	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	Note 1
C49	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C50	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C51	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C52	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	Note 1

Note 1. Not used in all Models

CHASSIS—TOP VIEW



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PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BROOKS PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	34-011-560	Q13-133	AG-60-Z	B-60-X	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES	ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BROOKS PART No.	IRC PART No.			OHMS	WATT	BROOKS PART No.	IRC PART No.	
R2	180Ω	½		BTS-180		R27	150KΩ	½		BTS-150 K	
R3	10KΩ	½		BTS-10K		R28	27KΩ	½		BTS-27K	
R4	4700Ω	½		BTS-4700		R29	10KΩ	½		BTS-10K	
R5	27KΩ	½		BTS-27K	Note 1	R30	47KΩ	½		BTS-47K	
R6	180Ω	½		BTS-180		R31	1 Meg	½		BTS-1 Meg	
R7	10KΩ	½		BTS-10K		R32	150KΩ	½		BTS-150K	
R8	180Ω	½				R33	100KΩ	½		BTS-100K	
R9	180Ω	½		BTS-180		R34	100KΩ	½		BTS-100K	
R10	27KΩ	½		BTS-27K		R35	27KΩ	½		BTS-27K	Note 2
R11	10KΩ	½		BTS-10K		R36	1 Meg	½		BTS-1 Meg	
R12	150KΩ	½		BTS-150K		R37	68Ω	½			
R13	180Ω	½		BTS-180		R38	10KΩ	½		BTS-10K	
R14	4700Ω	½		BTS-4700		R39	47KΩ	½		BTS-47K	Note 4
R15	180Ω	½			Note 2	R40	1 Meg	½		BTS-1 Meg	
R16	180Ω	½		BTS-180		R41	1 Meg	½		BTS-1 Meg	
R17	4700Ω	½		BTS-4700		R42	1 Meg	½		BTS-1 Meg	
R18	180Ω	½			Note 2	R43	27KΩ	½		BTS-27K	
R19	180Ω	½		BTS-180		R44	27KΩ	½		BTS-27K	Note 5
R20	1000Ω	½		BTS-1000		R45	10KΩ	½		BTS-10K	
R21	180Ω	½			Note 2	R46	1 Meg	½		BTS-1 Meg	
R22	47KΩ	½		BTS-47K		R47	68Ω	½			
R23	10KΩ	½		BTS-10K		R48	47KΩ	½		BTS-47K	Note 4
R24	27KΩ	½		BTS-27K		R49	100KΩ	½		BTS-100K	
R25	1000Ω	½		BTS-1000		R50	470KΩ	½		BTS -470K	
R26	27KΩ	½		BTS-27K	Note 3	R51	1000Ω	10		1 3/4A-1000	

Note 1 Some models use a 22KΩ resistor in this application.
Note 2 Not used in all models.
Note 3 Some models use a 47KΩ resistor in this application.
Note 4 Some models use a 27KΩ resistor in this application.
Note 5 Some models use a 10KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	BROOKS PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .80A	500VCT .080ADC	6.3VAC @ 5A		19853				R-10A

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	BROOKS PART No.	MERIT PART No.	
L1	FM Ant. Loading Coil	0Ω				
L2	FM Ant. Coil	0Ω				
L3	FM RF Coil	0Ω				
L4	FM Osc. Coil	0Ω				
L5	AM Ant. Coil	10Ω		15-415		
L6	AM RF Coil	9.4Ω		15-416		
L7	AM Osc. Coil	4.3Ω		15-417		Tapped @ .4Ω
L8	1st. FM IF	.3Ω	.3Ω	15-414	FM-254	
L9	1st. AM IF	26Ω	30Ω	14-733	BC-352	
L10	2nd. FM IF	.3Ω	.3Ω	15-414	FM-254	
L11	2nd. AM IF	22Ω	27Ω	14-734	BC-353	
L12	3rd. FM IF	.3Ω	.3Ω	15-414	FM-254	
L13	4th. FM IF	.3Ω	.3Ω	15-414	FM-254	
L14	Discriminator	.4Ω	.4Ω	17-3484	FM-253	Secondary tapped @ .2Ω

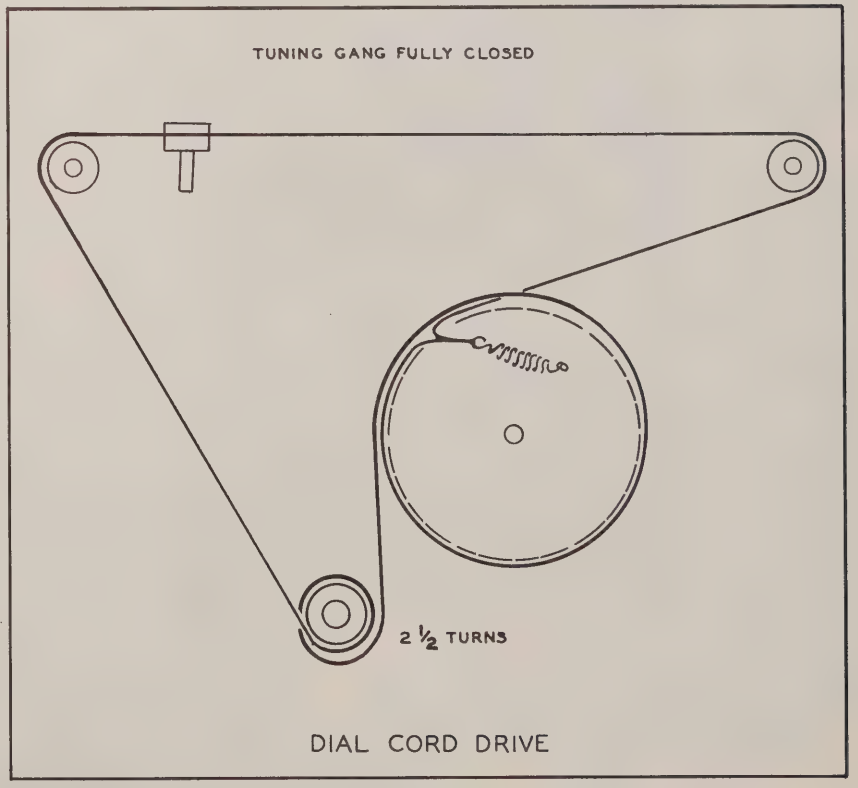
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BROOKS PART No.		
M1	Bayonet	7.5	.15	White			Type #51
M2	Bayonet	7.5	.15	White			Type #51

MISCELLANEOUS

ITEM No.	PART NAME	BROOKS PART No.	NOTES
M3	Switch		Function Selector



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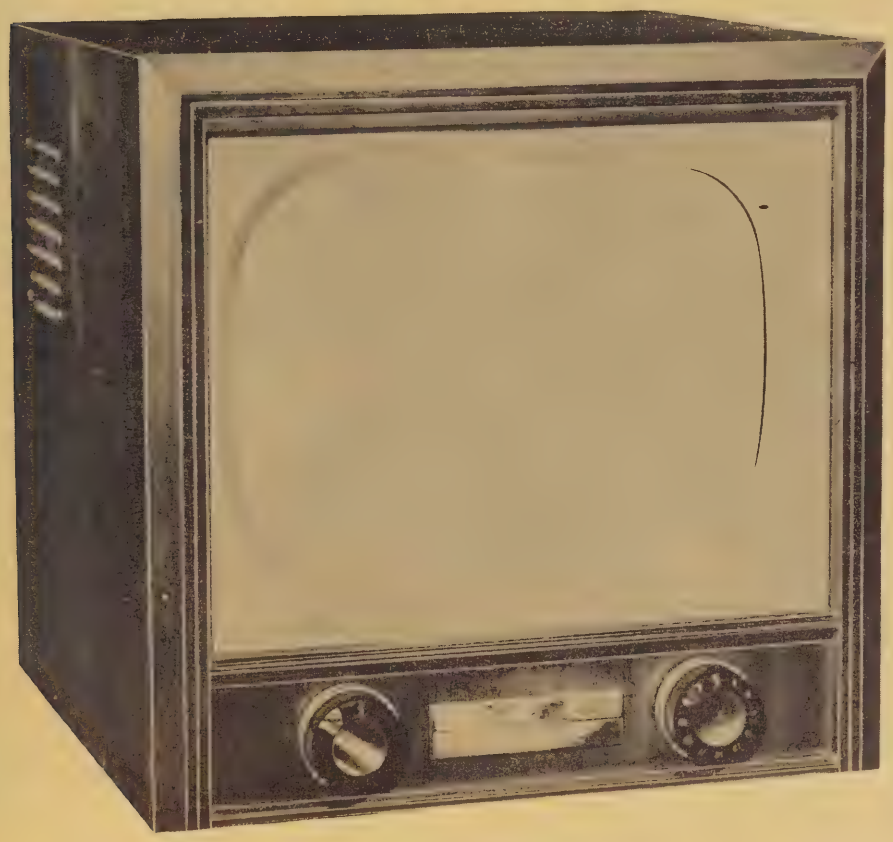

MODEL 25TV2-43-9022A

CORONADO
MODEL 25TV2-43-9022A

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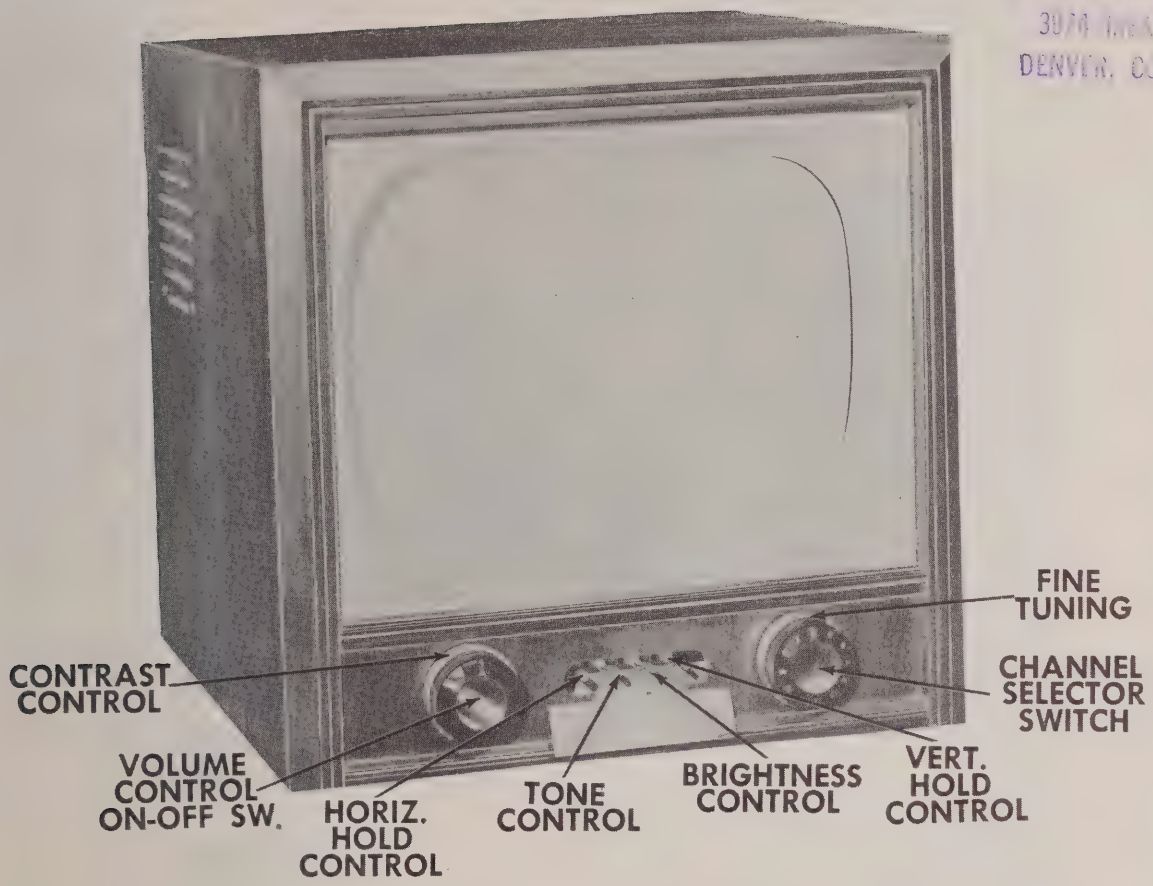

CORONADO
MODEL 25TV2-43-9022A

TRADE NAME	Coronado Model 25TV2-43-9022A
MANUFACTURER	Gamble-Skogmo Inc., 15 N. 8th. St, Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 volts AC-60 cycle — RATING 1.65 amp. @ 117 volts AC
TUNING RANGE-	Channel 2 thru 13

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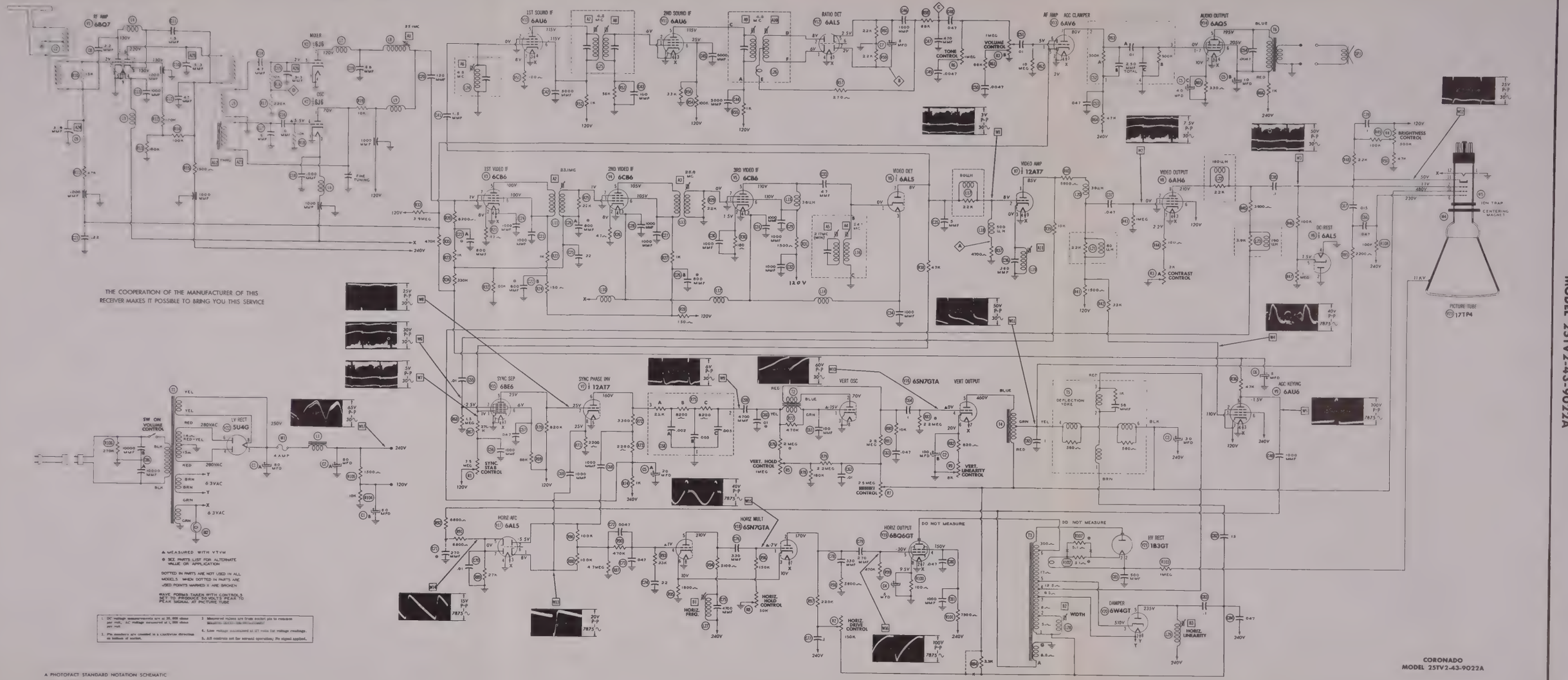
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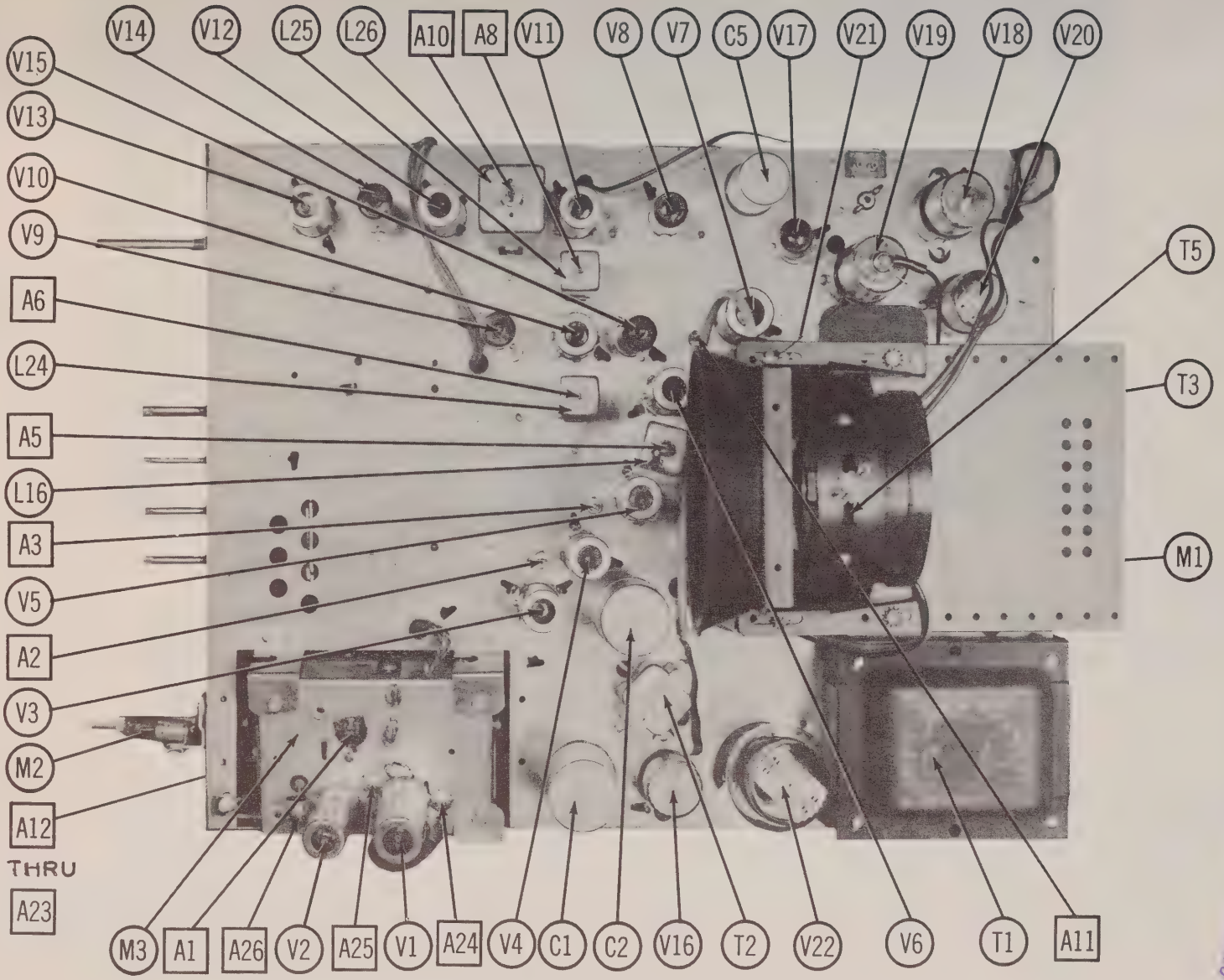

CHASSIS TOP VIEW

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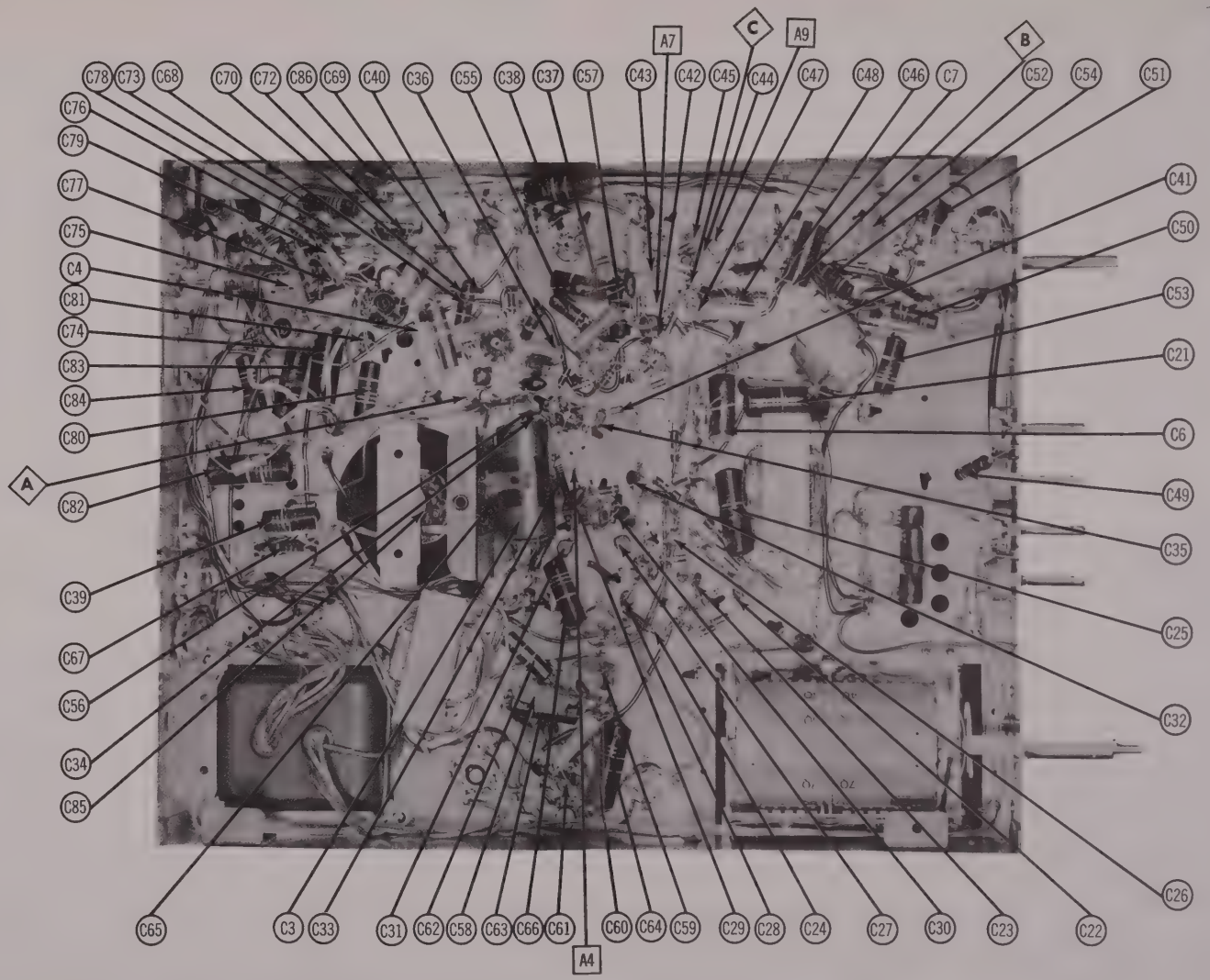
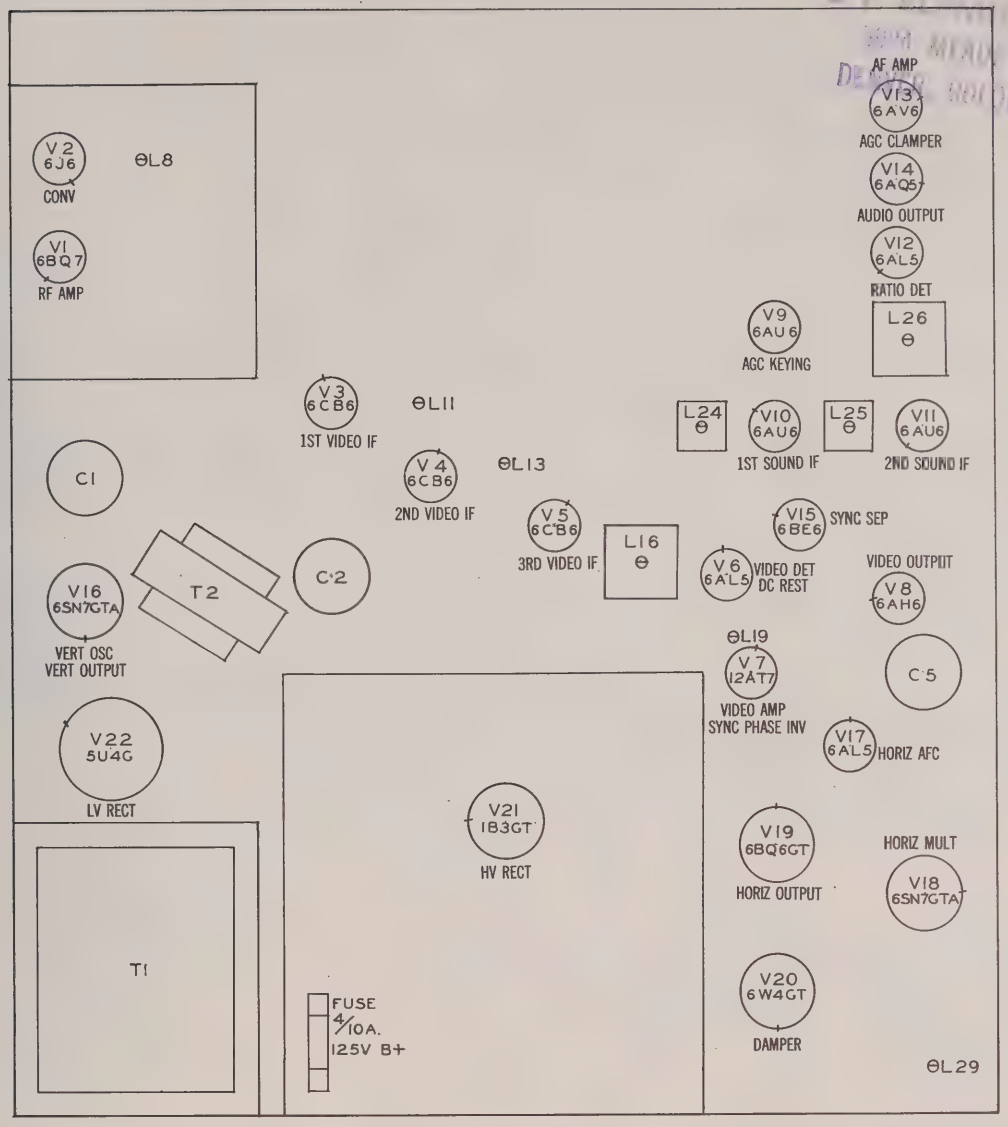


CHASSIS BOTTOM VIEW - CAPACITOR AND ALIGNMENT IDENTIFICATION

CORONADO
MODEL 25TV2-43-9022A

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, No sound - V22, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, No sound, Has raster - V2, V3, V4, V5, V6
No pic, No Sound, Has snow - V1, V2, V3
No pic, Has Sound, Has raster - V6, V7, V8, V23
Has pic, No Sound - V10, V11, V12, V13, V14
Overloaded picture - V19, V13

SYNC FAILURE
No vert. sync - V7, V16
No horiz. sync - V7, V17, V18
No vert. or horiz. sync - V7, V15

SWEEP FAILURE
No raster, has sound - V18, V19, V20, V21, V23
No vertical deflection - V16
Poor vert. linearity or foldover - V16
Poor horiz. linearity or foldover - V18, V19, V20
Narrow picture - V18, V19, V20, V21, V22
Vert. off freq. - V16
Horiz. off freq. - V7, V17, V18

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube, V18.

VIDEO IF ALIGNMENT

Remove the converter tube, V2 and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C25. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	25.1MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	24MC (10MC Swp)	21.7MC 23MC 23.5MC 25.25MC 26.2MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response curve similar to fig.1. If necessary retouch A1 through A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD.	High side to pin 1, (cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point B Common to chassis.	A6, A7, A8, A9,	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point C Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation at 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A6, A7, A8, A9	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
8.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A10	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Turn contrast control to maximum clockwise position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to pin 7 of 6AL5 (V12)	Not used.	4.5MC (400% Mod.)	Any	Vert. amp. to pin 2 of picture tube. Low side to chassis.	A11	Adjust for MINIMUM 400% indications on scope.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The oscillator adjustment screws for each channel are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A) Low side to chassis.	A12	Adjust to place sound marker in notch as in fig. 4. Video marker should be at 50%.
			207 MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.74MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.25MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage form the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10K to point ◇D. Low side to chassis.	A24, A25 A26	Adjust for response curve similar to fig.5 with markers above 90%.
12.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to fig.5. If markers fall below 70% on any channel make slight compromise adjustments of A24, A25 and A26 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

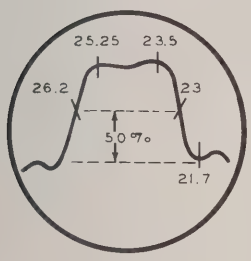


FIG. 1

FIG. 2

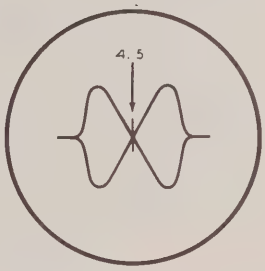


FIG. 3

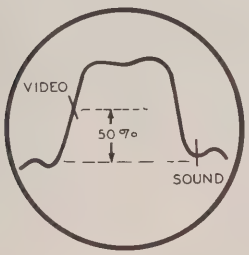


FIG.4

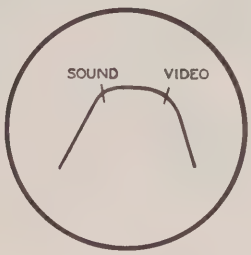
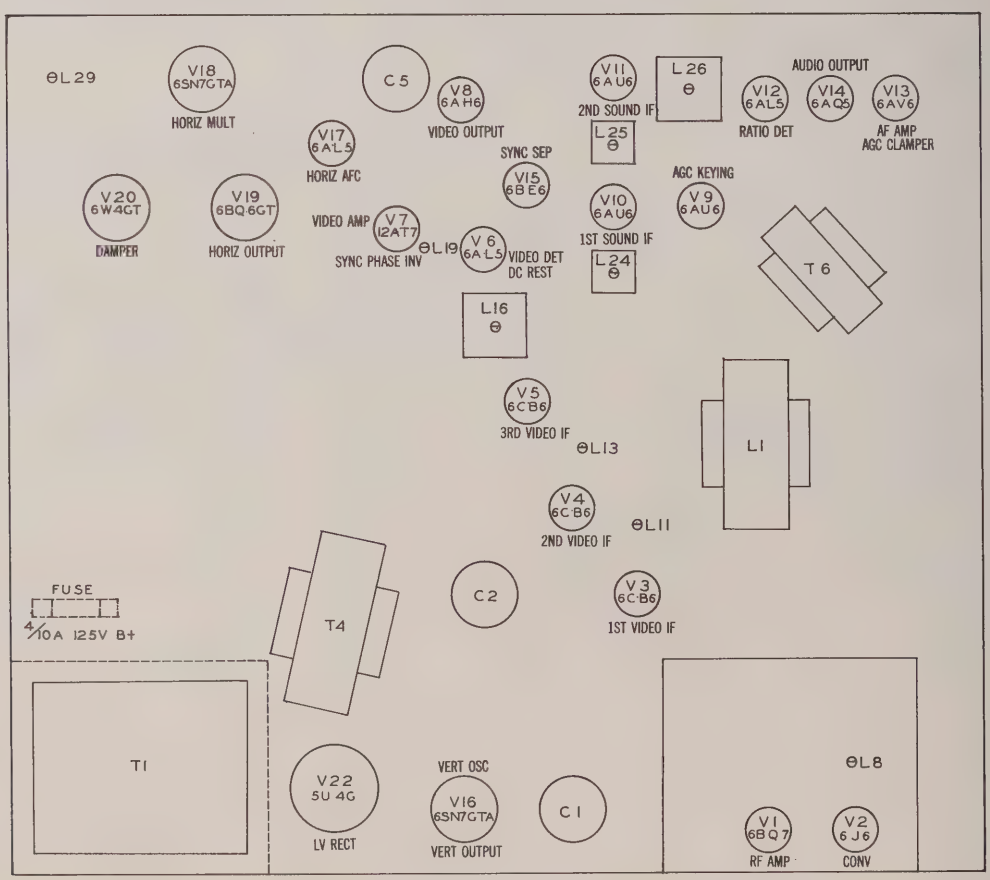


FIG.5

RESISTANCE MEASUREMENTS

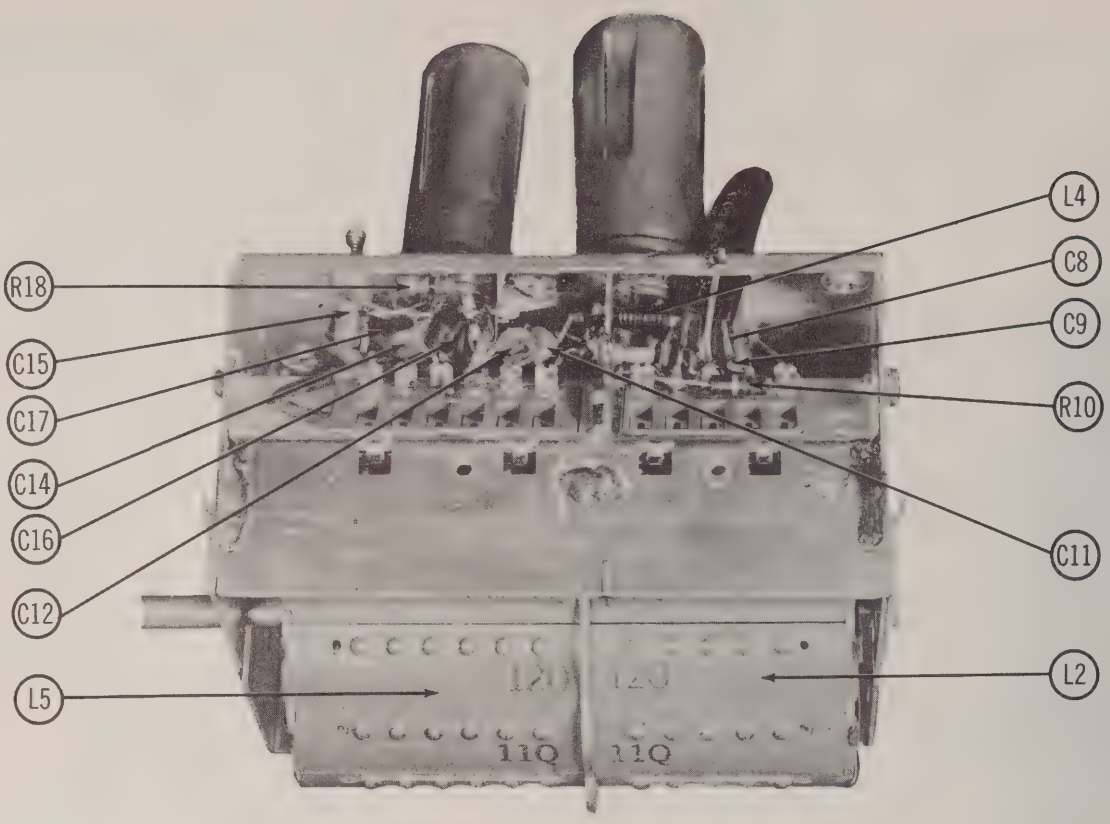
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	720KΩ	0Ω	.1Ω	0Ω	†1.5KΩ	†150KΩ	INF	0Ω
V 2	6J6	†11KΩ	†1.5KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 4	6CB6	100KΩ	47Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 5	6CB6	.3Ω	180Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 6	6AL5	.3Ω	0Ω	.1Ω	0Ω	1 Meg	0Ω	4.7KΩ		
V 7	12AT7	†8.6KΩ	4.7KΩ	.2Ω	0Ω	0Ω	†6.5KΩ	†820KΩ	2.2KΩ	.1Ω
V 8	6AH6	1 Meg	0Ω	.1Ω	0Ω	†4.9KΩ	†15KΩ	250Ω		
V 9	6AU6	†36KΩ	†1.5KΩ	.1Ω	0Ω	440KΩ	†51Ω	†1.5KΩ		
V 10	6AU6	2.6Ω	0Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	100Ω		
V 11	6AU6	56KΩ	0Ω	.1Ω	0Ω	†2.5KΩ	25KΩ	0Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	22KΩ	INF	22KΩ		
V 13	6AV6	10Meg	0Ω	.1Ω	0Ω	670KΩ	670KΩ	†550KΩ		
V 14	6AQ5	500KΩ	330Ω	0Ω	.1Ω	†1.5KΩ	†1KΩ	500KΩ		
V 15	6BE6	51KΩ	0Ω	.1Ω	0Ω	†820KΩ	†69KΩ	1.5Meg		
V 16	6SN7GTA	2.3Meg	#2.7Meg	0Ω	2.2Meg	#4.8KΩ	2.1KΩ	.1Ω	0Ω	
V 17	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	8.7KΩ	INF	8.7KΩ		
V 18	6SN7GTA	180KΩ	#300KΩ	1.8KΩ	5.1Meg	†5.2KΩ	1.8KΩ	.1Ω	0Ω	
V 19	6BQ6GT	5.7KΩ	0Ω	INF	†7.5KΩ	470KΩ	#80KΩ	.1Ω	100Ω	TopCap #17Ω
V 20	6W4GT	†51Ω	†100KΩ	300KΩ	5.1Meg	†66Ω	†51Ω	#21Ω	#21Ω	
V 21	1B3GT	PINS 1-8 HAVE INF RESISTANCE								TopCap #31 7Ω
V 22	5U4G	INF	9.5KΩ	INF	15.6Ω	1.3KΩ	14.4Ω	INF	9.5KΩ	
V 23	17TP4	0Ω	1.1Meg	Pin 6 †100KΩ	Pin 10 #3.3KΩ	Pin 11 †270KΩ	Pin 12 .1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V22
# MEASURED FROM PIN 3 OF V20

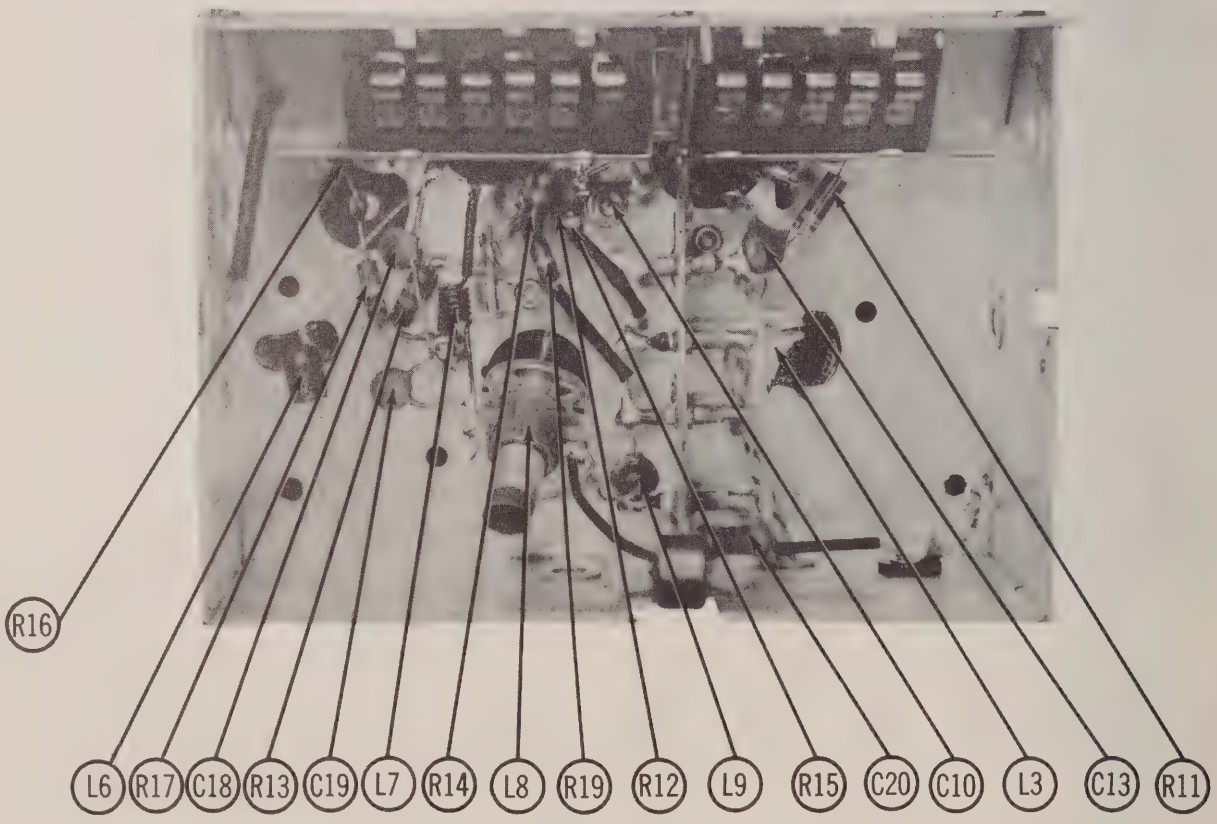


BOTTOM VIEW

TUBE PLACEMENT CHART

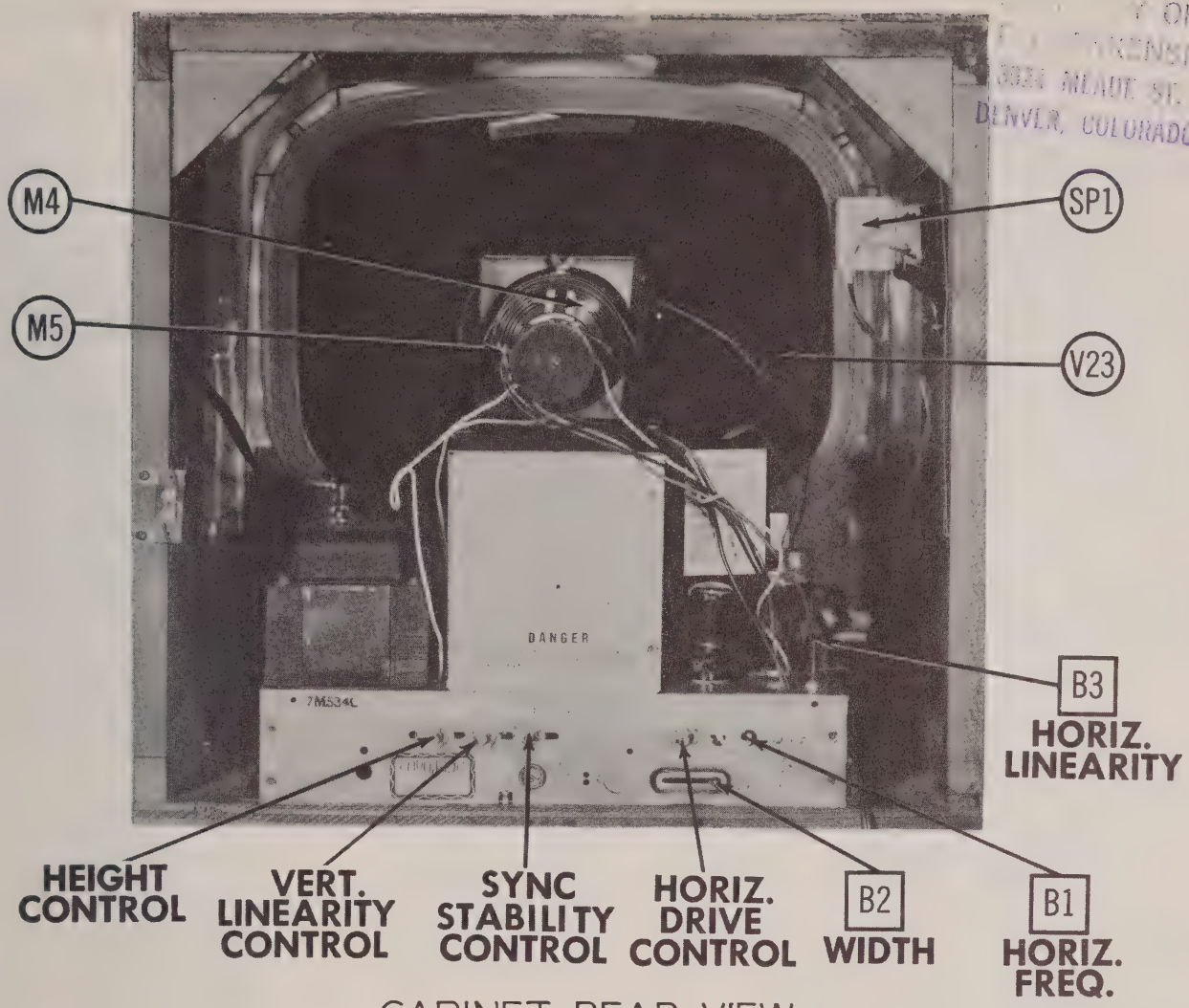


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

Y OF
KENSHIP
3824 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture falls into sync.

Adjust the horizontal drive control for the best compromise between brightness and linearity.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for picture that is symmetrical from left to right.

SYNC STABILITY CONTROL ADJUSTMENT

Tune set to strongest TV signal available.

Turn the sync stability control clockwise until bending of the picture occurs at the top, then turn counter clockwise until the bending just disappears.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 2 wood screws and 2 metal screws. Remove rear cover.
3. Disconnect built-in antenna and speaker.
4. Remove 2 wood screws. Remove antenna bracket.
5. Remove 4 speaker nuts. Remove speaker.
6. Remove 5 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-DC Restorer	6AL5	6AL5	5BT	
V7	Video Amplifier-Sync Phase Inv.	12AT7	12AT7	9A	
V8	Video Output	6AH6	6AH6	7BK	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier-AGC Clamper	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BT	
V15	Sync Separator	6BE6	6BE6	7CH	
V16	Vert Oscillator-Vert Output	6SN7GTA	6SN7GTA	6BD	
V17	Horiz. AFC	6AL5	6AL5	5BT	
V18	Horiz. Mult.	6SN7GTA	6SN7GTA	6BD	
V19	Horiz. Output	6DQ6GT	6DQ6GT	6AM	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RMA BASE TYPE	NOTES
V23	17TP4	17TP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	▲80	300	45X397	AFH3-46		UPT84245		FP227.6	TVL-3642	
B	▲60	300								
C2A	▲80	300	45X395	AFH3-199		UPT4445-V10		FP375	TVL-3722	
B	▲100	50								
C3	30	400	45X39 3	PRS450/30		BR304SA		TC77	TVA-1711	
C4	5	25	45X378	PRS150/4		BR550		TC30	TVA-1203	
C5A	▲20	300	45X399	AFH3-138		UPT2145-V5		FP386	TVL-3751	
B	▲10	300								
C	40	50								
C6	5	25	45X361	PRS150/4		BR550		TC30	TVA-1203	
C7	5	25	45X378	PRS150/4		BR550		TC30	TVA-1203	
C8	2.2				TCZ-2.2		NP0K-2R2		57CCB-V22	
C9	3-9				829-10					
C10	.5-3				829-3			CT565A		
C11	1.5			SII.5NP0	TCZ-1.5		NP0K-1R5	Z7S515	57CCB-V15	
C12	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C13	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C14	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C15	5-3				829-3			CT565A		
C16	10			SI10NP0	TCZ-10		NP0K-100	Z7-541	57CC-Q1	
C17	5			SI5N750			N750K-050	N7-555	57CUB-V5	
C18	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C19	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	Z7-5568	57CCB-V68	
C20	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C21	.22	200	RCP10M2224M	P488-22		UPT84P22		PT4025	2TM-P22	
C22A	800			BPD-2X001		TM5DD1	812-001	DCD-521	5HK-ZD1	Note 1
B	800									Note 1
C23	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	2TM-P22	
C26A	800			BPD-2X001		TM5DD1	812-001	DCD-521	5HK-ZD1	Note 1
B	800									Note 1
C27	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C28	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C33	47		47X603	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C34	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C35	5		47X562	SI5NP0	TCZ-4.7		NP0K-050	Z7-555	57CCB-V47	
C36	360	500	47X568							
C37	.047	400	RCP10M4473M	P488-047	DF-503	PTE4P47		PT4147	4TM-P47	
C38	.1	400	RCP10M4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C39	.1	200	RCP10M2104M	P288-1	DF-104	PTE2P1		PT401	2TM-P1	
C40	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C41	1.5		47X584	SII.5NP0	TCZ-1.5		NP0K-1R5	Z7-5515	57CCB-V15	
C42	5000		47X507	B1P-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	100		47X604	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C44	5000		47X507	B1P-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C45	5000		47X507	B1P-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C46	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C47	470	500	47X525	B469-0005	D6-471	5W5T5	GP2K-471	MC245	1F M-35	
C48	.047	200	RCP10M2473M	P288-047	DF-503	PTE4P47		PT4147	2TM-P47	
C49	.0047	400	RCP10M4472M	P688-0047	D6-472	PTE5D47	GP2-333-472	PT6247	6TM-D47	
C50	.0047	400	RCP10M4472M	P688-0047	D6-472	PTE5D47	GP2-333-472	PT6247	6TM-D47	
C51	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C52A	.01									
B	350		‡76X5		‡PC-80		◆1404-01			
C										
C53	.047	400	RCP10M4473M	P488-047	DF-503	PTE4P47		PT4147	4TM-P47	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C54	.0047	600	RCP10M6472M	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C55	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C56	1000	500	80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C57	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C58A	.002			P688-002		PTE6D2		PT6225		
B	.005		◆76X7	P688-005	◆PC-100	PTE6D5	◆1405-01	PT6235	◆30IC1	
C	.005			P688-005		PTE6D5		PT6235		
C59	6700	500	47X543	1464-005		1DH5D5		MC8465		
C60	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	Note 3
C61	100		47X603	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C62	.01	600	RCP10M6103M	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C63	.047	600	RCP10M6473M	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C64	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C65	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C66	.047	600	RCP10M6473M	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C67	.015	800	RCP10M8153M	P688-015		PTE6S15		PT615	6TM-S15	
C68	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C69	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C70	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C71	270	500	RCM20A271K	1469-0003		SR5T3		MCB341	M5-33	Note 3
C72	.047	400	RCP10M4473M	P688-047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C73	.047	200	RCP10M2473M	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C74	.22	300	RCP10M2224M	P488-22		PTE4P22		PT4025	2TM-P22	
C75	4700	500	47X543	1464-005		1DH5D5		MC8465	M5-35	
C76	330	500	47X570	1469-00035						
C77	.1	400	RCP10M4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C78	330	500	47X570	1469-00035						
C79	270	500	RCM20A271K	1469-0003		SR5T3		MCB341	M5-33	
C80	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C81	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C82	.15	400	RCP10M4154M	P488-15		PTE4P15			4TM-P15	
C83	.1	400	RCP10M4104M	P488-1		PTE4P1		PT401	4TM-P1	
C84	.047	400	RCP10M4473M	P488-047		PTE4S47		PT4147	4TM-S47	
C85	500	20000	47X580	HV20C	TV3-502	MMC-20TS	413-501		20DK-T5	
C86A	10000		‡76X8		DD-3-103	TM6D81	821-01	DC-511	5HK-S1	
B	10000			BPD-01			821-01	DC-511		

Note 1. Some Models use 1000MMF in this application (Part #80X3 for dual unit)
Note 2. Some Models use .0047MFD in this application (Part #RCP10M4472M)
Note 3. Not used in all Models.
◆ Items C58A, C58B, C58C, R75A, R75B, R75C are combined in one unit.
† Items C52A, C52B, C52C, R63A, R63B are combined in one unit. When replacing Items seperately, C52B and C52C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1	7.5Meg		40X363		Q11-238	AG-52-8	AB-46	U-43	Sync Stability
R2A	150KΩ		B40X331A	Q11-238	AG-52-8	AB-46	U-43	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FK5-1/4	AK-1	Not Req.	Attach to R2A
R3A	3000Ω		76X8	QJ-353 *	RTV-218	SBBT-503-8	UF33L	Contrast-Panel
B	1 Meg						UR16-T25	Volume-Tapped ⓐ 220KΩ-Rear
C	Switch						US-28	Attach to R3B
R4A	500KΩ		40X290D	Q11-133	AG-58-8	AB-59	U-50	Brightness
B	Shaft		Not Req.	Not Req.	R8-3/16	AK-4	Not Req.	Attach to R4A
R5A	1 Meg		40X291E	Q11-137	AG-61-8	AB-69	U-54	Vert Hold
B	Shaft		Not Req.	Not Req.	R8-3/16	AK-4	Not Req.	Attach to R5A
R6A	1 Meg		40X291S	Q11-137	AG-61-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	R8-3/16	AK-8	Not Req.	Attach to R6A
R7A	2.5Meg		B40X364	Q11-239	AG-64-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R7A
R8A	50KΩ		40X292A	Q11-123	AG-44-8	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	K8S-3	AK-4	Not Req.	Attach to R8A
R9A	8000Ω		40X362	Q11-118	AG-27-8	AB-14	SU-20	Vert Linearity
B	Shaft		Not Req.	Not Req.	FK5-1/4	AK-1	Not Req.	Attach to R9A

CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS R17-113 & P1-204 (Panel)
R13-137X & R2-216 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R10	15KΩ				
R11	47KΩ				
R12	100KΩ				
R13	160KΩ-5%				
R14	100KΩ-5%		B85102	BTS-1000	
R15	1500Ω		B85102	BTS-1000	
R16	10KΩ		B85151	BTS-150	
R17	220KΩ		B83223		
R18	10KΩ		B83473	BTS-100K	
R19	10KΩ				
R20	6300Ω		B83223		
R21	47Ω		B83470		
R22	1000Ω		B85102	BTS-1000	
R23	1000Ω		B85102	BTS-1000	
R24	15Ω		B85151	BTS-150	
R25	22KΩ		B83223		
R26	47Ω		B83470		
R27	1000Ω		B85102	BTS-1000	
R28	15Ω		B85151	BTS-150	
R29	22KΩ		B83223		
R30	18Ω		B84181	BTS-180	
R31	150Ω		B84153	BTS-150	
R32	100KΩ		B84104	BTS-100K	
R33	3.9Meg-5%		B83395	BTS-3.9Meg-5%	
R34	330KΩ-5%		B83334	BTS-330K-5%	
R35	470KΩ		B84474	BTS-470K	
R36	47KΩ		B84473	BTS-47K	
R37	4700Ω-5%		B83472	BTS-4700-5%	
R38	47KΩ		B84473	BTS-47K	
R39	10KΩ		B84103	BTS-10K	
R40	560Ω	1	B84562	BTA-5600	
R41	1500Ω		B84152	BTS-1500	
R42	33KΩ		B84333	BTS-33K	
R43	1 Meg		B84105	BTS-1 Meg	
R44	100Ω		B84101	BTS 100	
R45	3900Ω-5%	1			BTA-3900-5%
R46	100KΩ		B85104	BTS-100K	
R47	1 Meg		B84105	BTS-1 Meg	
R48	22KΩ		B84223	BTS-22K	
R49	100KΩ		B85104	BTS-100K	
R50	47KΩ		B85473	BTS-47K	
R51	100Ω		B84101	BTS-100	
R52	1000Ω		B85102	BTS-1000	
R53	56KΩ		B84563		
R54	100KΩ		B84104		
R55	1000Ω		B85102	BTS 1000	
R56	33KΩ		B84333	BTS-33K	
R57	270Ω		B84271	BTS-270	
R58	68KΩ		B84683	BTS-68K	
R59	22KΩ		B84223	BTS-22K	
R60	22KΩ		B84223	BTS-22K	
R61	68KΩ		B84683	BTS-68K	
R62	10Meg		B85106	BTS-10Meg	
R63A	500KΩ				
B	500KΩ		‡76X5		
R64	47KΩ	3	B85473	BTS-47K	
R65	330Ω	1	C84331	BTA-330	
R66	1000Ω	2	D84103	BTS-1000	
R67	270KΩ		B84274	BTS-270K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R68	1.5Meg		B84155	BTS-1.5Meg	
R69	68KΩ		B84683	BTS-68K	
R70	820KΩ		B84824	BTS-820K	
R71	2200Ω-5%		B83223	BTS-2200-5%	
R72	3300Ω		B84332	BTS-3300	
R73	2200Ω-5%		B83223	BTS-2200-5%	
R74	1000Ω		C84102	BTA-1000	
R75A	22KΩ			BTS-220	
B	8200Ω		◆ 76X7	BTS-8200	
C	8200Ω			BTS-8200	
R76	2 Meg-5%			BTS-2Meg-5%	Note 1
R77	470KΩ		B85474	BTS-470K	
R78	180KΩ		B84184	BTS-180K	
R79	2.2Meg		B84225	BTS-2.2Meg	
R80	10KΩ		B84103	BTS-10K	
R81	2.2Meg		B84225	BTS-2.2Meg	
R82	820Ω		B84821	BTS 820	
R83	2.2Meg		B84225	BTS-2.2 2Meg	Note 2
R84	3300Ω		C84332	BTA-3300	
R85	2200Ω		B84222	BTS-2200	
R86	100KΩ		B84104	BTS-100K	
R87	6.7Meg		B85475	BTS-4 7Meg	

† Items R63A, R63B, C52A, C52B, C53C are combined in one unit.
◆ Items R75A, R75B, R75C, C58A, C58B, C58C are combined in one unit
Note 1. Some models use a 1.5Meg resistor in this application.
Note 2. Some models use a 1Meg resistor in this application.
Note 3. Some models use a 3.3Ω resistor in this application.
Note 4. Not used in all models.

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R89	100KΩ		B84104	BTS-100K	
R89	27KΩ		B85273	BTS 27K	
R90	470KΩ		B85474	BTS 470K	
R91	6800Ω			BTS-6800	
R92	6800Ω			BTS 6800	
R93	33KΩ		B84333	BTS-33K	
R94	5100Ω-5%	1	C83512	BTA-5100 5%	
R95	18000Ω-5%		B83182	BTS 1800 5%	
R96	150KΩ		B83154	BTS—150K	
R97	220KΩ		B85224	BTS-220K	
R98	5600Ω		B84562	BTS-5600	
R99	470KΩ		B84474	BTS-470K	
R100	100Ω	2	B84101	BW-2-100	
R101	75000Ω-5%	2	B84752	BTB-7500-5%	
R102	5.1Ω	4			Note 3
R103	1 Meg	1	C85105		
R104	10KΩ	5	43X272	1 3/4A-10K	
R105	15000Ω	15	43X275	2D-1500	
R105	270KΩ		B85274	BTS 270K	
R107	5.1Ω				Note 4
R108	100KΩ		B84104	BTS-100K	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
T1	117VAC	555VCT	5VAC	6 3VAC	53X325		P8187		
	ⓐ 1.65A	.330ADC	ⓑ 2A	ⓑ 5.3A					
				REC. 4					
				6.3VAC					
				④ 1.2A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T2	190Ω	100Ω	54X8	A-8125	A-3000 ①	TSO-3 ③	A-97X	Vert. Osc. Trans. Horiz. Output Trans.
T3	346.5Ω	8.5Ω	53X338					
tap ⓐ		REC. 2	53X326 ①					
.5Ω, 8.5Ω		8Ω						
8Ω, 29.5Ω								
46.5Ω								
T4	150Ω		51X156	A-8141	A-3029		A-104X	Vert. Output Trans.
tap ⓐ 4.5Ω								
T5A	20Ω		9A2261	DY-9	MDF-T0	TY-3	Y-17	Horiz. Deflection Coils
B	50Ω		9A2255 ④					Vert Deflection Coils

1. Drill one new mtg. hole.
2. Mount on top of chassis.
3. Alternate Horiz. Output Trans.
4. Alternate deflection yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T6	1.9KΩ	3.7Ω	485Ω	95Ω	51X150A	A-3330	A-2928	RO-2 S-2X

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C IMP	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	6"	PM	3 7Ω	12A504	ST-108 Mod. P6-X	6A1	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 (Ⓒ)	REPLACEMENT DATA: CORONADO PART No	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No
L1	240	51.1	1 6 Hy	52X90	C-2326 ②	C-2981 ①	TH-1733	C-17X ①

1. Drill one new mtg. hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	CORONADO PART No.	MERIT PART No.	
L2	Ant. Coils	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF Choke	0Ω				
L5	RF Mixer Grid & Osc.	0Ω				
L6	Coils					
L6	Fil Choke	0Ω				
L7	RF Choke	0Ω				
L8	1st. Video IF	.8Ω				
L9	RF Choke	1.1Ω				
L10	Fil Choke	0Ω		9A2033		
L11	2nd Video IF	.3Ω	.3Ω	9A2230		
L12	Fil Choke	0Ω		9A2033		
L13	3rd Video IF	.3Ω	.3Ω	9A2230		
L14	Fil Choke	0Ω		9A2033		
L15	RF Choke	2.5Ω		9A1979	TV-180	36 Microheneries
L16	4th Video IF	.3Ω		9A2226	TV-101	Includes Trap
L17	Series Peaking Coil	7.5Ω		36A10	TV-181 *	60 Microheneries Wound on 22K resistor
L18	Shunt Peaking Coil	26Ω		36A11	TV-188	500 Microheneries
L19	4.5MC Trap	.2Ω		9A2074	TV-151	
L20	Series Peaking Coil	2.5Ω		9A1979	TV-180	36 Microheneries
L21	Shunt Peaking Coil	7.5Ω		36A10	TV-181 *	60 Microheneries Wound on 22K resistor
L22	Series Peaking Coil	13Ω		36A12	TV-184 *	160 Microheneries Wound on 22K resistor
L23	Series Peaking Coil	14Ω		36A13	TV-184 †	190 Microheneries Wound on 3.9K resistor
L24	1st Sound IF	2.6Ω		9A2168		
L25	2nd Sound IF	1.8Ω	1.8Ω	9A2170	TV-113	
L26	Ratio Det.	3.6Ω	.8Ω CT	9A2269	TV-110 ■	Tertiary Winding .2Ω
L27	Horiz. Osc.	47Ω		9A2096	TV-163	
L28	Width Coil	.6Ω		9A2183	MWC-2	
L29	Horiz. Lin.	15Ω		9A2262		

* Parallel with 22K resistor.
† Parallel with 3.9K resistor.
■ Drill one new mtg. hole.

FUSES

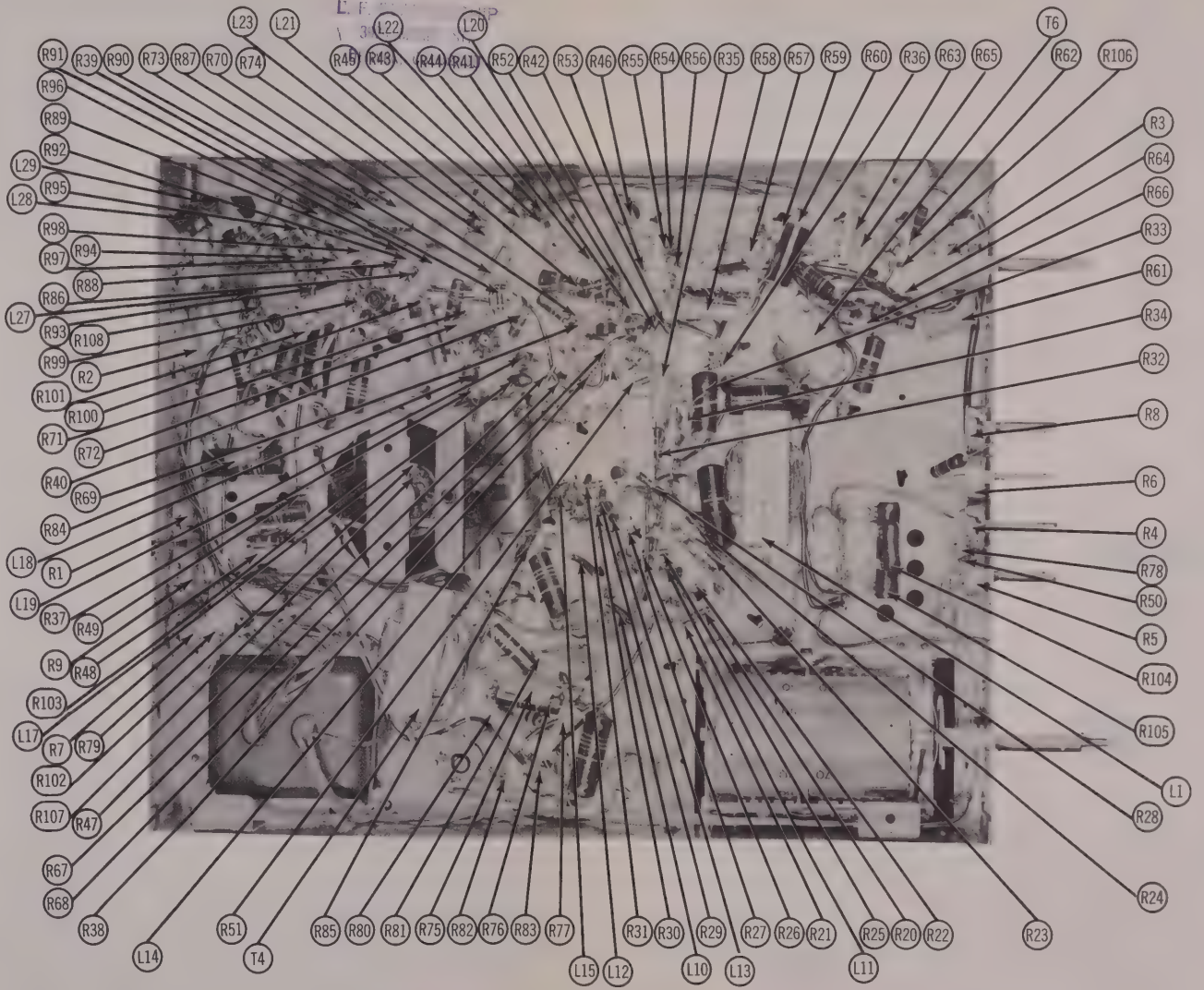
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CORONADO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	4/10A 125V	16X147-3	16X146	313.400	357001	MDL-4/10	4405

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CORONADO PART No.		
M2	Bayonet	7.5	.2	White	7A32		Type No. # 51

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M3	RF Tuner	25A1094	
M4	Centering Magnet	2A419	
M5	Ion Trap	2A421	
	Knob	10A779	Off/On Volume
	Knob	10A785	Fine Tuning
	Knob	10A786	Contrast
	Knob	10A812	Channel Selector
	Escutcheon	4X1184	Control Panel
	Mask	4X1190	
	Back Cover	S-14X59	Includes line cord assembly
	Safety Glass	17X168	



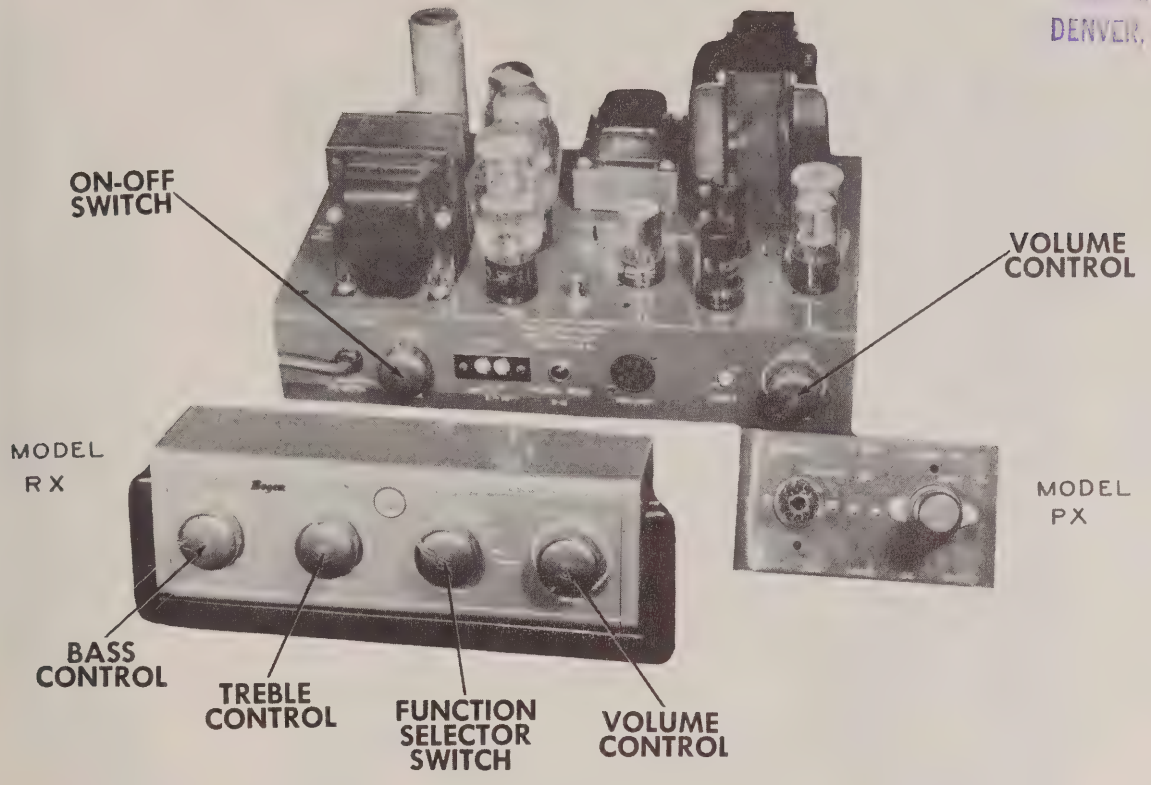
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

DAVID BOGEN
MODELS H010, PX, RX

PROPERTY OF
L. F. BLANKENSHIP
3924 MEXICO ST.
DENVER, COLORADO

DAVID BOGEN
MODELS H010, PX, RX

MODEL H010



DAVID BOGEN
MODELS H010, PX, RX

TRADE NAME	David Bogen H010 (Main Amp.), PX (Pre. Amp.), RX (Remote Unit)
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N.Y.
TYPE SET	AC Operated Five Channel Audio Amplifier With Pre Amplifier & Remote Control Units.
TUBES (TEN)	Types 12AX7 Pre Amp., 6SC7 Pre Amp., 6SL7 AF Amp.-Phase Inv., (2) 6SQ7 AF Amp., 6SN7GT Driver, (2) 6B4G Audio Output, 6X5GT Rect., 5V4G Rect.
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .97 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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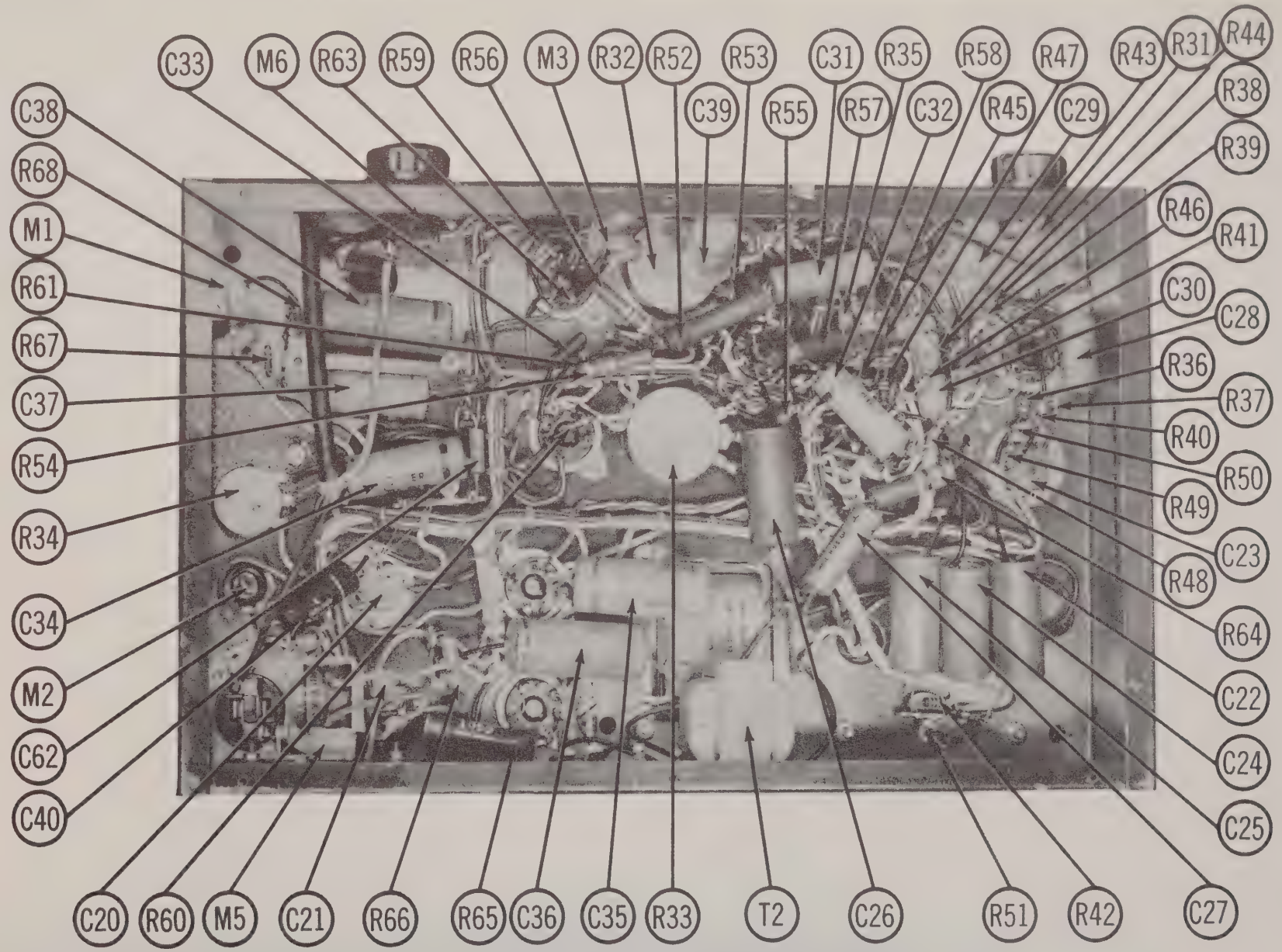


BOTTOM VIEW - MODEL HO10

PARTS LIST-MODELS PX & RX

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PART No.	STANDARD REPLACEMENT		
V1	Pre Amplifier	12AX7	12AX7	9A	
V2	Pre Amplifier	6SC7	6SC7	8S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲10	450		AFH2-47		UP5Q45		FP231	TVL-2750	
B	▲10	450								
C2	10	450		PRS450/10		BR1045A		TC72	TVA-1705	
C3	500	500		1468-0005	D6-501	5W5T5	GP2K-501	MC245	1FM-35	
C4	500	500		1468-0005	D6-501	5W5T5	GP2K-501	MC245	1FM-35	
C5	500	500		1468-0005	D6-501	5W5T5	GP2K-501	MC245	1FM-35	
C6	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C9	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	Note 1
C10	.047	400		P488-047	DF-503	PTE4S7		PT4147	4TM-S47	Note 2
C11	.03	200		P488-03		PTE6S3		PT413	6TM-S3	Note 3
C12	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 4
C13	.03	200		P488-03		PTE6S3		PT413	6TM-S3	
C14	.25	200		P488-25		PJ2P25		PT4025	2TM-P25	
C15	.25	200		P488-25		PJ2P25		PT4025	2TM-P25	
C16	.003	600		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C17	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C18	.03	200		P488-03		PTE6S3		PT413	6TM-S3	
C19	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	

Note 1 Some models use a .0051 MFD in this application.
Note 2 Some models use .02 MFD in this application.
Note 3 Some models use .01 MFD in this application.
Note 4 Some models use .0022 MFD in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	1/2	V284	Q11-133	AG-58-S	B-59	U-50	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	1/2	V284	Q11-133	AG-58-S	B-59	U-50	Treble
B	Shaft		Not Req.	Not rReq.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	1/2	V202-B	Q13-133	AG-60-Z	B-60	U-48	Volume (PX Chassis)
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R4	220KΩ	1/2		BTS-220K	
R5	100KΩ	1/2		BTS-100K	
R6	220KΩ	1/2		BTS-220K	
R7	100KΩ	1/2		BTS-100K	
R8	47KΩ	1/2		BTS-47K	
R9	1 Meg	1/2		BTS-1 Meg	
R10	47KΩ	1/2		BTS-47K	
R11	1 Meg	1/2		BTS-1 Meg	
R12	470KΩ	1/2		BTS-470K	
R13	68KΩ	1/2		BTS-68K	
R14	100KΩ	1/2		BTS-100K	
R15	2.2 Meg	1/2		BTS-2.2Meg	
R16	2.2 Meg	1/2		BTS-2.2Meg	
R17	2.2 Meg	1/2		BTS-2.2Meg	
R18	2.2 Meg	1/2		BTS-2.2Meg	
R19	82KΩ	1/2		BTS-82K	Note 1
R20	6200Ω	1/2			Note 2
R21	150KΩ	1/2		BTS-150K	
R22	470KΩ	1/2		BTS-470K	
R23	33KΩ	1/2		BTS-33K	
R24	1500Ω	1/2		BTS-1500	
R25	100KΩ	1/2		BTS-100K	
R26	220KΩ	1/2		BTS-220K	
R27	22KΩ	1/2		BTS-22K	
R28	1000Ω	1/2		BTS-1000	
R29	47KΩ	1/2		BTS-47K	
R30	150KΩ	1/2		BTS-150K	

Note 1 Some models use a 150KΩ resistor in this application.
Note 2 Some models use a 27KΩ resistor in this application.

PARTS LIST-MODEL H010 (CONT.)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R31A	500KΩ	1/2	V202-B	Q13-133	AG-60-Z	B-60	U-48	Volume (H010 Chassis)
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R32A	20KΩ	4	353-5212-1T		A10-20K		M20MP	Drive Balance-Wire Wound
B	Shaft		Not Req.		RS-2		Not Req.	Attach to R5A
R33A	20KΩ	4	353-5212-1T		A10-20K		M20MP	Drive Balance-Wire Wound
B	Shaft		Not Req.		RS-2		Not Req.	Attach to R6A.
R34A	300Ω	2	V260-A	W-300	A43-300	V-125		Hum Balance-Wire Wound
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.		Attach to R7A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R35	68KΩ	1/2		BTS-68K	
R36	3300Ω	1/2		BTS-3300	
R37	100KΩ	1/2		BTS-100K	
R38	470KΩ	1/2		BTS-470K	
R39	3300Ω	1/2		BTS-3300	
R40	100KΩ	1/2		BTS-100K	
R41	100KΩ	1/2		BTS-100K	
R42	47KΩ	1/2		BTS-47K	
R43	470KΩ	1/2		BTS-470K	
R44	1000Ω	1/2		BTS-1000	
R45	220KΩ	1/2		BTS-220K	
R46	470KΩ	1/2		BTS-470K	
R47	1000Ω	1/2		BTS-1000	
R48	220 KΩ	1/2		BTS-220K	
R49	47KΩ	1/2		BTS-47K	
R50	47KΩ	1/2		BTS-47K	
R51	10KΩ	1/2		BTS-10K	
R52	25KΩ	4		1 3/4A-25K	
R53	470KΩ	1/2		BTS-470K	
R54	47KΩ	2		BTB-47K	
R55	470KΩ	1/2		BTS-470K	
R56	47KΩ	2		BTB-47K	
R57	10KΩ	1		BTA-10K	
R58	10KΩ	1/2		BTS-10K	
R59	1 Meg	1/2		BTS-1 Meg	
R60	1 Meg	1/2		BTS-1 Meg	
R61	100KΩ	1/2		BTS-100K	
R62	22KΩ	1		BTA-22K	
R63	4.7Ω	1/2			
R64	68Ω	2			
R65	1000Ω	7		1 3/4A-1000	
R66	2200Ω	2		BTB-2200	
R67	15KΩ	1/2		BTS-15K	
R68	470Ω	1/2		BTS-470	Note 3

Note 3 Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC	800VCT	5VAC	6.3VAC		PC-8412	P-3155		
	② .96A	.72ADC	② 3A	② 5A					
T2	117VAC	125V DC				PS-8415 ①	P-3046		
	② .01A	.0052A							

① Do not use 6.3V winding.

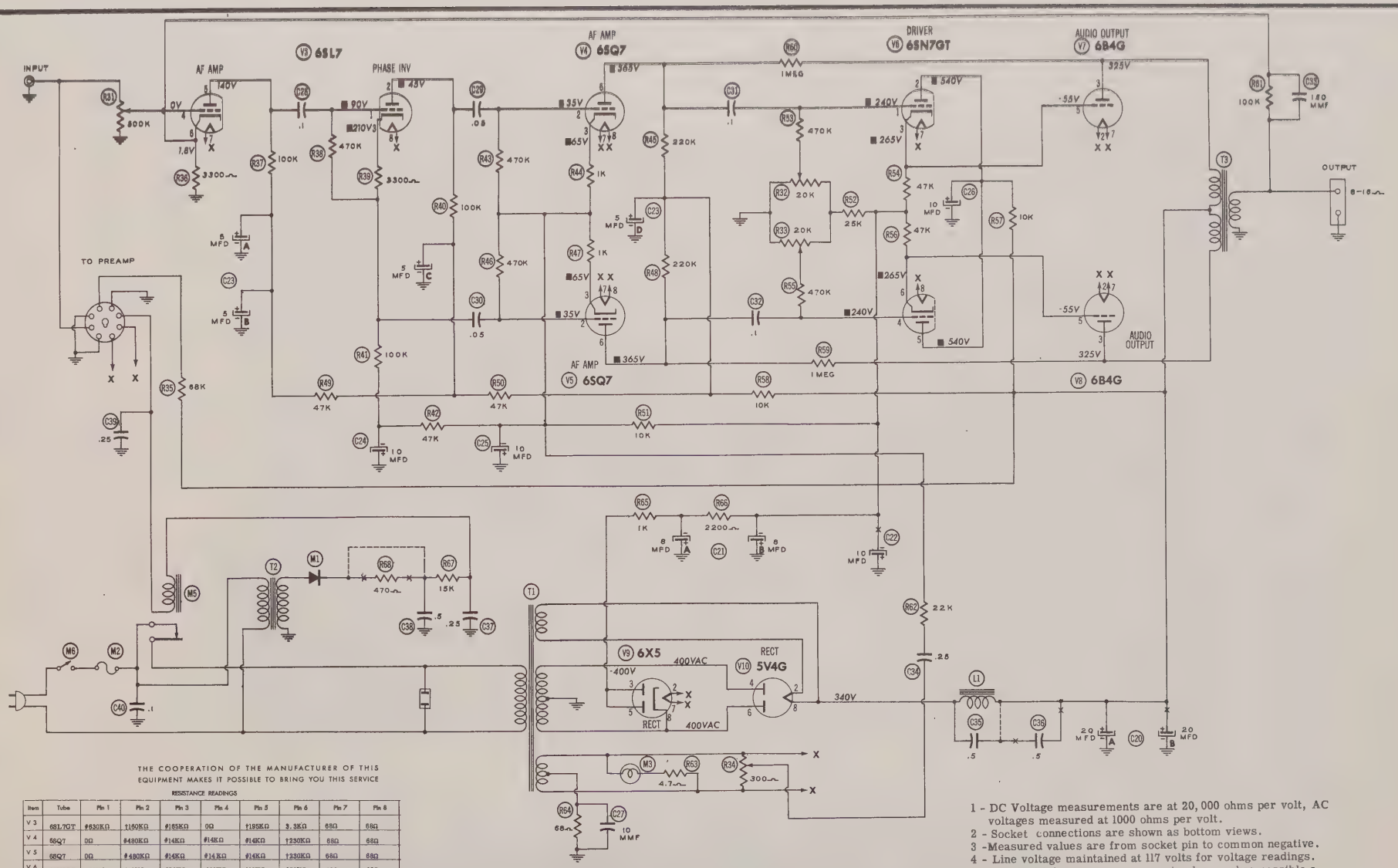
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		David Bogen PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T3	4.1KΩ	8-16Ω	225ΩCT	.58Ω					S-33A ①	① Drill new mtg. holes

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	David Bogen PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.110A	53Ω	3.4HY					C-13X ②

② Drill new mounting holes.



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 3	6SL7GT	#630KΩ	†160KΩ	#185KΩ	0Ω	†195KΩ	3.3KΩ	68Ω	68Ω
V 4	6SQ7	0Ω	#480KΩ	#14KΩ	#14KΩ	#14KΩ	†230KΩ	68Ω	68Ω
V 5	6SQ7	0Ω	#480KΩ	#14KΩ	#14KΩ	#14KΩ	†230KΩ	68Ω	68Ω
V 6	6SN7GT	480KΩ	†10KΩ	#50KΩ	480KΩ	†10KΩ	#50KΩ	68Ω	68Ω
V 7	6B4G	INF	68Ω	†186Ω	.8Ω	#50KΩ	†230KΩ	68Ω	INF
V 8	6B4G	INF	68Ω	†186Ω	INF	#50KΩ	†230KΩ	68Ω	INF
V 9	6X5GT	INF	68Ω	38KΩ	INF	38KΩ	INF	68Ω	68Ω
V 10	5V4G	INF	70KΩ	INF	58Ω	INF	63Ω	INF	70KΩ

ALL MEASUREMENTS TAKEN IN TUNER POSITION
† MEASURED FROM PIN 8 OF V10
# MEASURED FROM PINS 3 & 5 OF V9
= MEASURED FROM -320VDC LINE

1 - DC Voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 -Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

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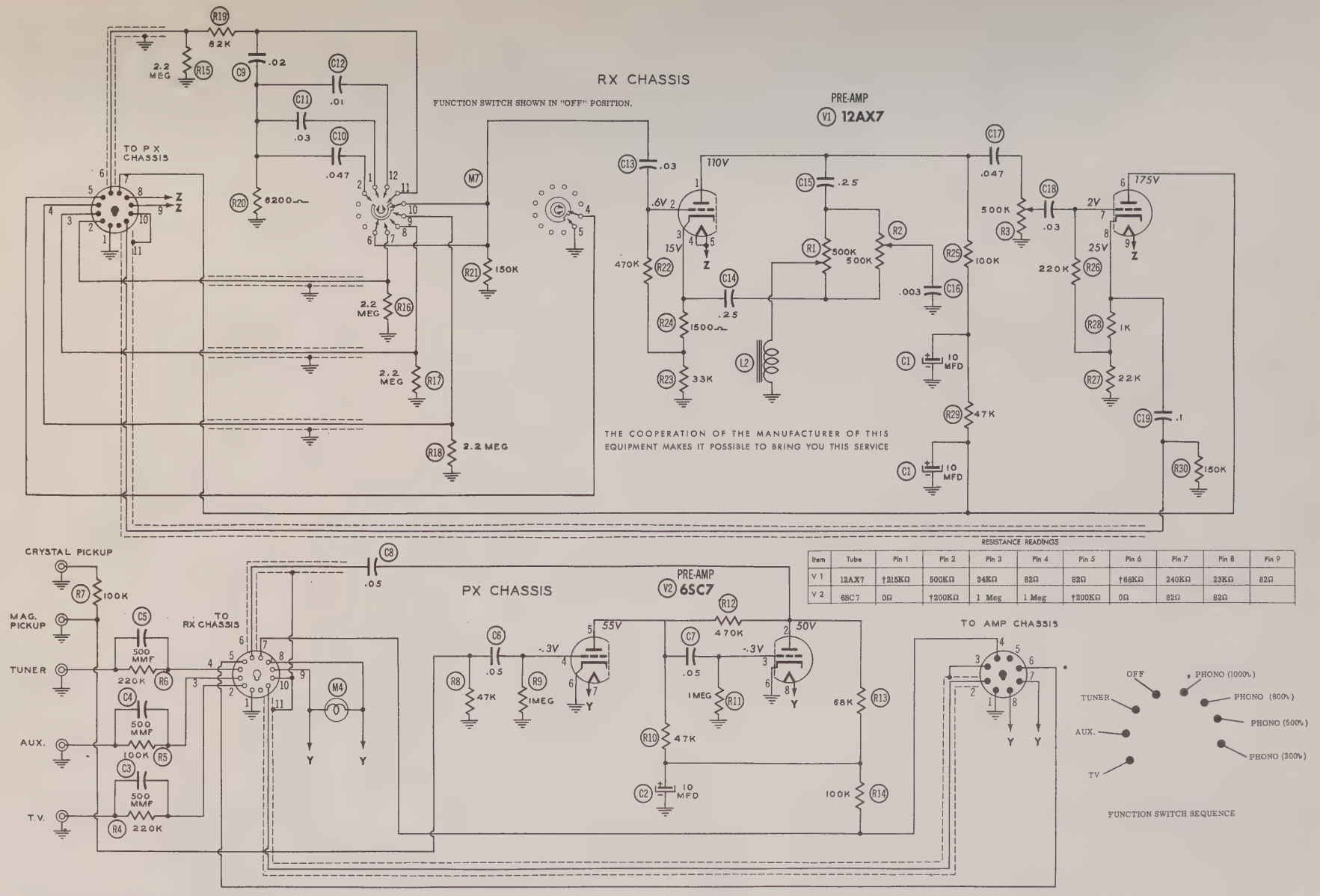
SCHEMATIC - MODEL HO10



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SCHEMATIC - MODELS PX & RX

183-5

PARTS LIST-MODELS PX & RX (CONT.)

TONE CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: David Bogen PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L2		1.26KΩ	24.3HY					H-75J ①

① Drill one 3/8" hole.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: David Bogen PART No.		NOTES
M4	Bayonet	7.5	.2	White			Type No. #51

MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M7	Switch	S-371F	Function Selector

PARTS LIST-MODEL HO10

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: David Bogen PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V3	AF Amplifier-Phase Ind	6SL7	6SL7	8BD	
V4	AF Amplifier	6SQ7	6SQ7	8Q	
V5	AF Amplifier	6SQ7	6SQ7	8Q	
V6	Driver	6SN7GT	6SN7GT	8BD	
V7	Audio Output	6B4G	6B4G	5S	
V8	Audio Output	6B4G	6B4G	5S	
V9	Rectifier	6X5GT	6X5GT	6S	
V10	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C20A	▲20	450		AFH2-69		UP2250		FP376.5	TVL-2755	
B	▲20	450								Note 5
C21A	8	500		GL450/8-8		KR588A		RM262	CL-88	
B	8	500								Note 6
C22	10	450		PRS450/10		BR1045A		TC72	TVA-1705	Note 5
C23A	▲5	450		AFH4-09		UP5Q45		WP433.6	TVL-4760	
B	■5	450								
C	5	450								
D	▲5	450								
C24	10	450		PRS450/10		BR1045A		TC72	TVA-1705	
C25	10	450		PRS450/10		BR1045A		TC72	TVA-1705	
C26	10	450		PRS450/10		BR1045A		TC72	TVA-1705	
C27	10	25		PRS25/10		BR102A		TC22	TVA-1204	
C28	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C29	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C30	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C31	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C32	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C33	150	500		1468-00015	D5-151	5W5T15	GP2K-151	MC236	1FM-315	
C34	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C35	.5	400		484-5		PJ4P5		PT405	4TM-P5	Note 7
C36	.5	400		484-5		PJ4P5		PT405	4TM-P5	Note 5
C37	.25	200		P488-25		PJ2P25		PT4025	2TM-P25	
C38	.5	400		484-5		PJ4P5		PT405	4TM-P5	
C39	.25	200		P488-25		PJ2P25		PT4125	2TM-P25	
C40	.1	400		P488-1		PTE4P1		PT401	4TM-P1	

Note 5 Not used in all models.
Note 6 Some models use 18 MFD in this application.
Note 7 Some models use .25 MFD in this application.

PARTS LIST-MODEL HO10 (CONT.)

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: David Bogen PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	NOTES
M1	.0052A		RS-40	8Y1	1159	8S20	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: David Bogen PART No. FUSE	David Bogen PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	MDL	2A 125V			313002 (3AG-Slo-Blo)	342001	MDL-2	HCM

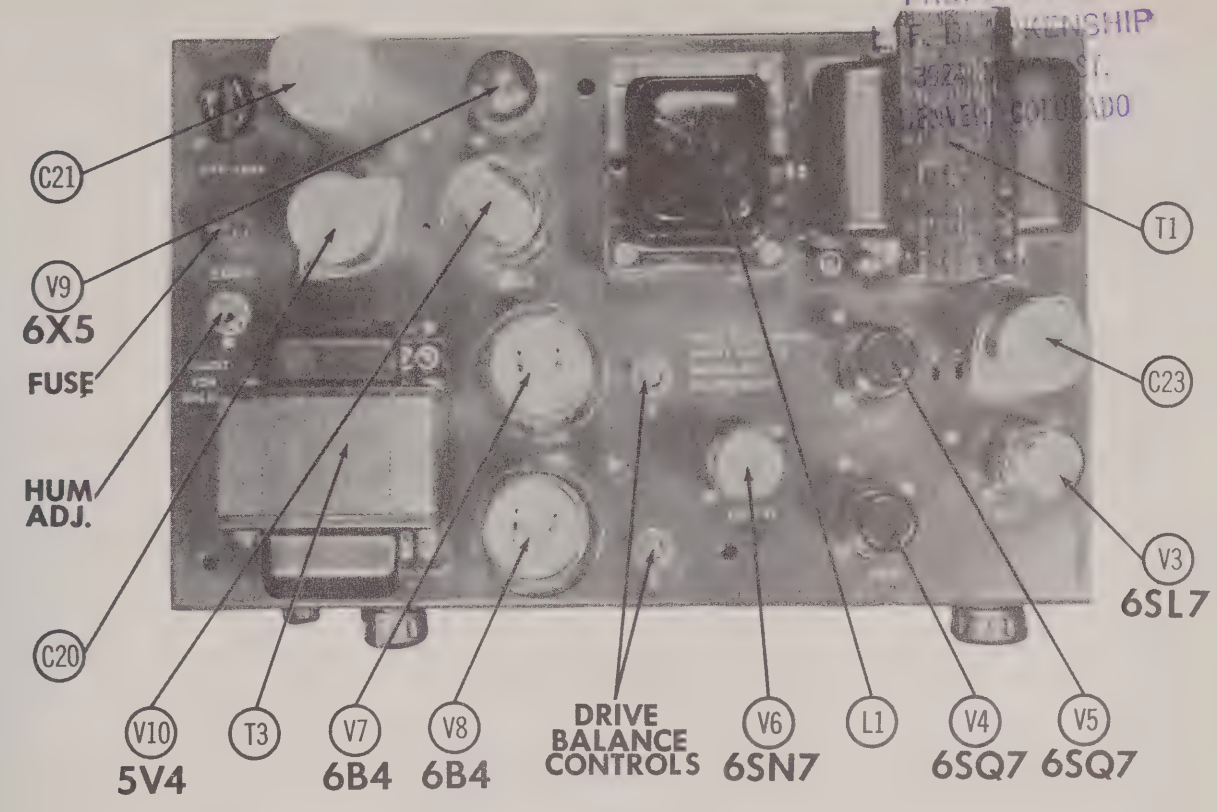
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: David Bogen PART No.		NOTES
M3	Bayonet	6-8	.15	Brown			Type No. #47

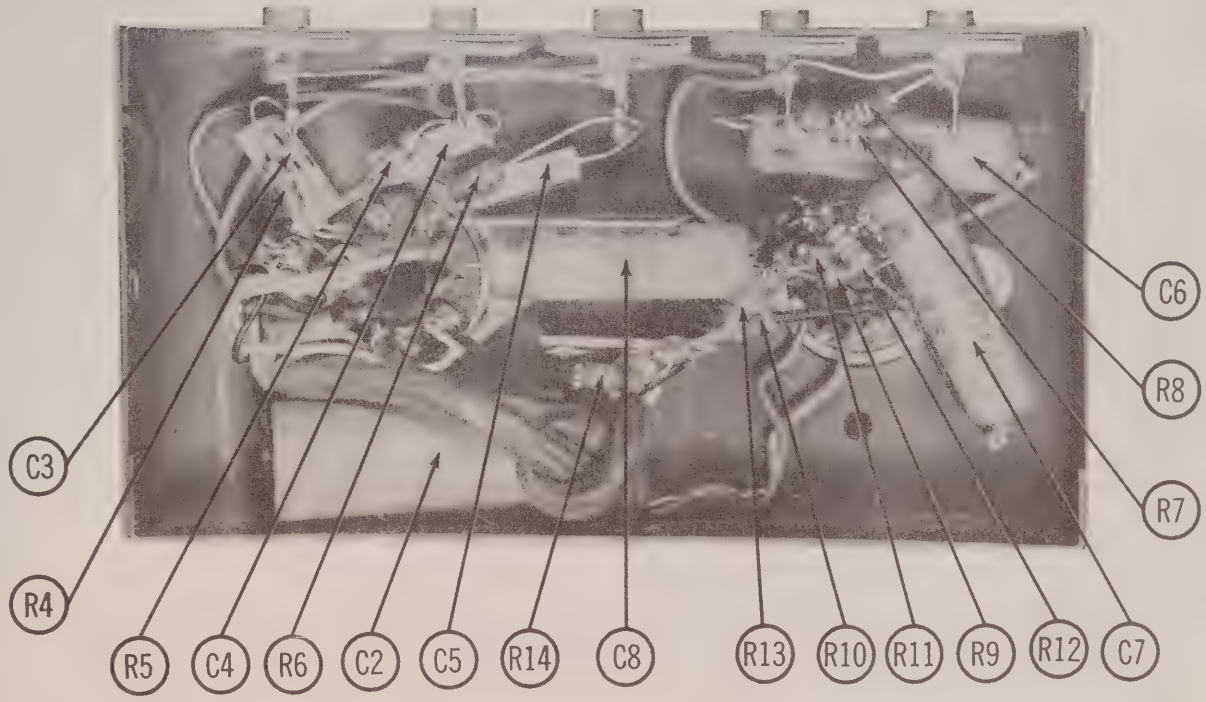
MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M5	Relay	H358	(Coil 10KΩ)
M6	Switch		On/Off

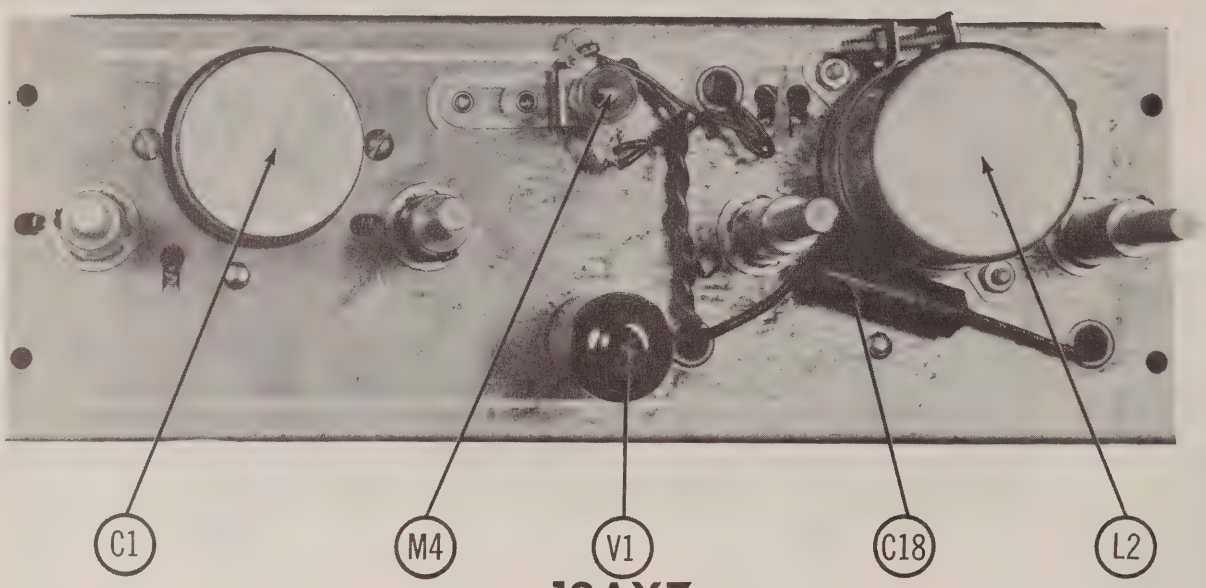
PROPERTY OF



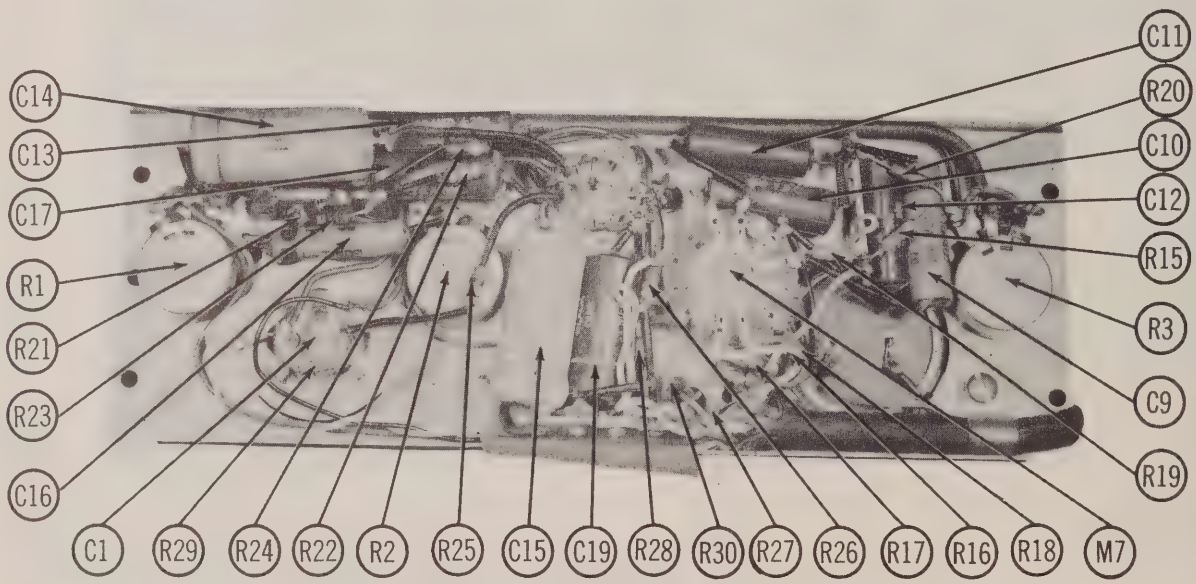
TOP VIEW - MODEL HO10



BOTTOM VIEW - MODEL PX



TOP VIEW - MODEL RX



BOTTOM VIEW - MODEL RX

PHOTOFACT* Folder

*TRADE MARK

EMERSON
MODELS 711B, 712B, 720B (Ch. 120164B)

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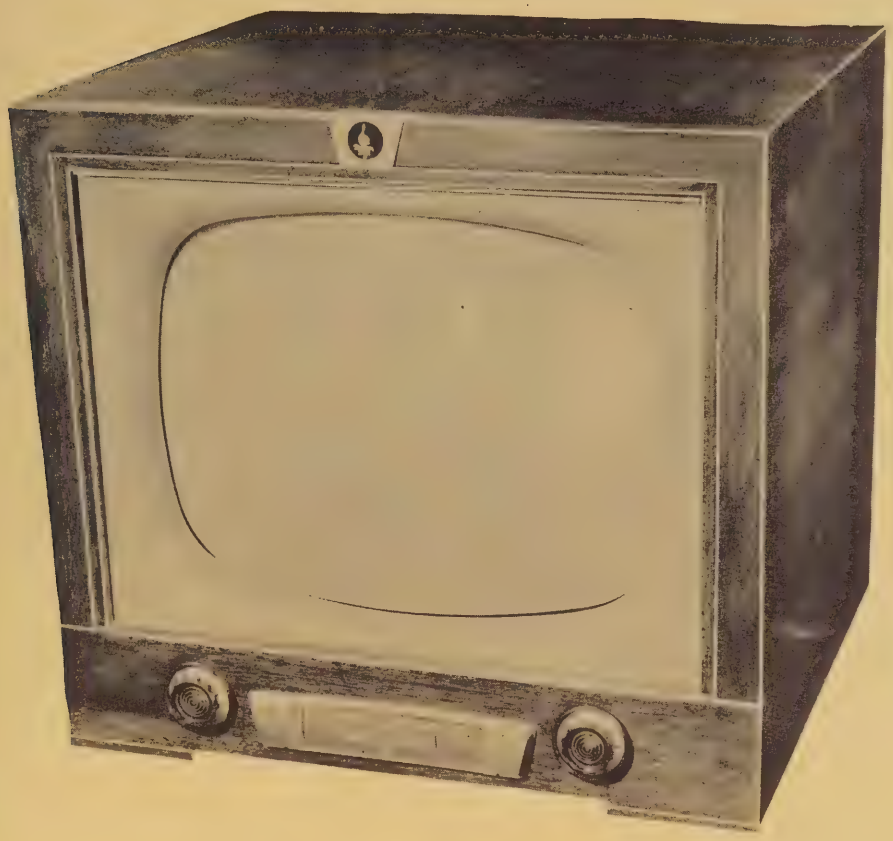

MODEL 711B

EMERSON
MODELS 711B, 712B, 720B (Ch. 120164B)

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DATE 10-52 SET 183 FOLDER 6

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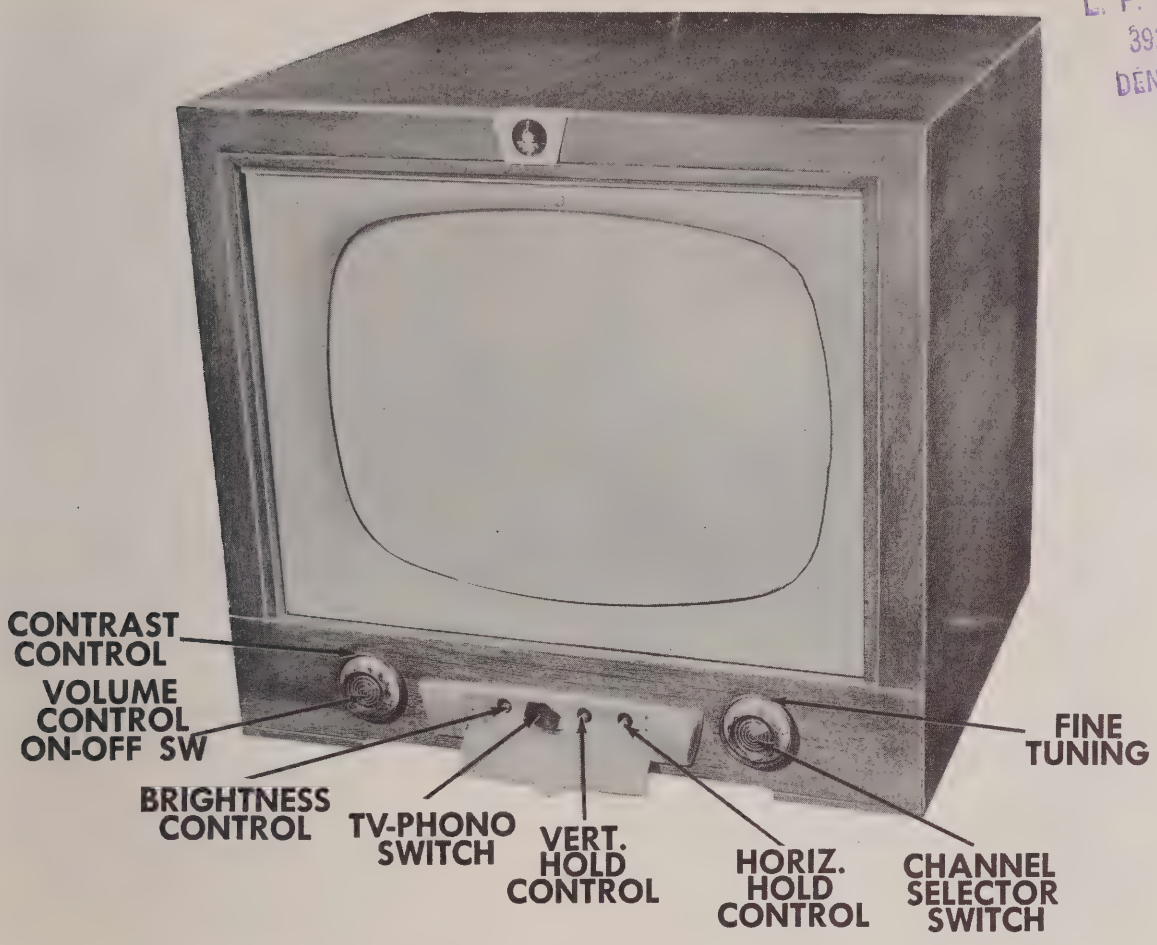

EMERSON
MODELS 711B, 712B, 720B (Ch. 120164B)

EMERSON 711B

TRADE NAME	Emerson models 711B, 712B, 720B (Chassis 120164-B)
MANUFACTURER	Emerson Radio & Phonograph Corp., 111 8th. Ave., New York, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty-Three
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.8 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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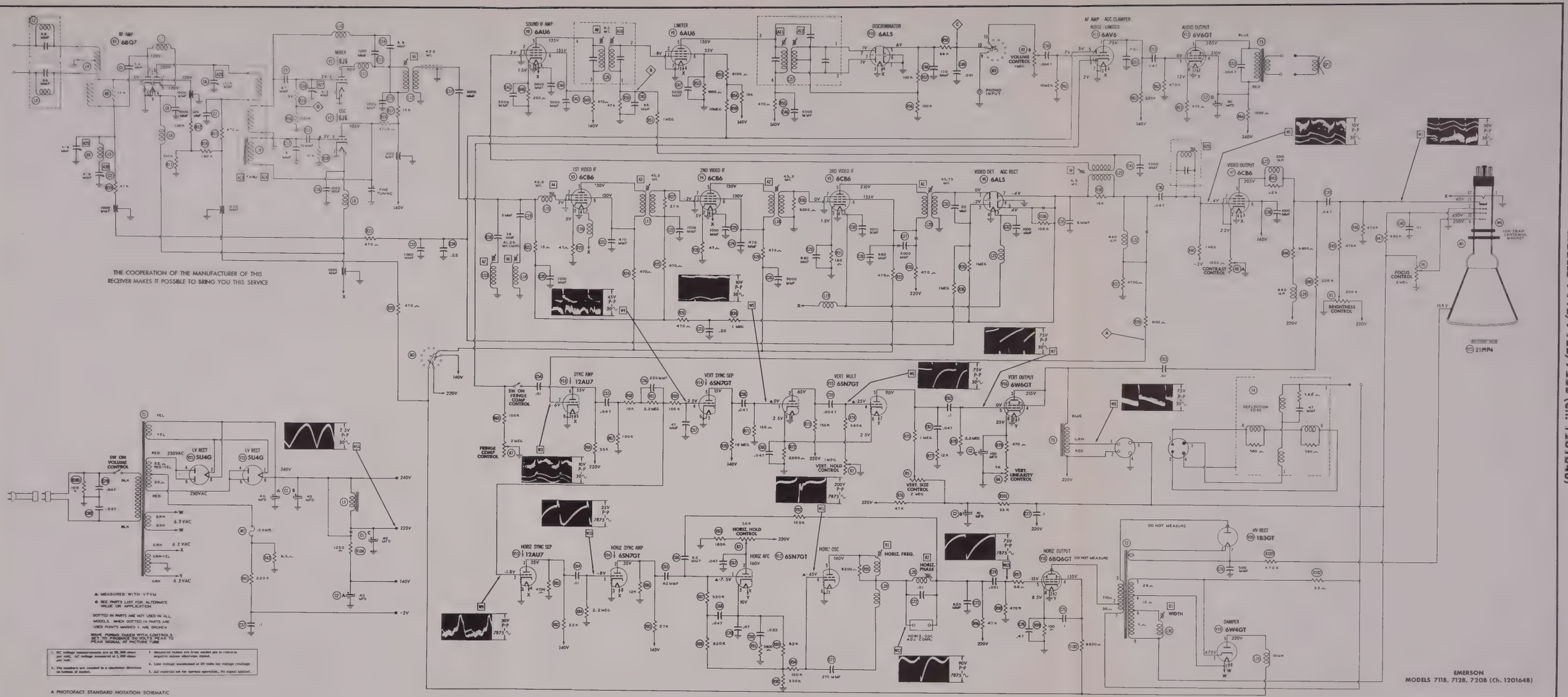
EMERSON
MODELS 711B, 712B, 720B (Ch. 120164B)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
RF AMP 6BQ7
MIXER 6BJ6
OSC 6BJ6
SOUND IF AMP 6AU6
LIMITER 6AU6
DISCRIMINATOR 6AL5
AF AMP AGC CLAMPER NOISE LIMITER 6AV6
AUDIO OUTPUT 6V6GT
1ST VIDEO IF 6CB6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
VIDEO DET AGC RECT 6AL5
VIDEO OUTPUT 6CB6
SYNC AMP 12AU7
VERT SYNC SEP 6SN7GT
VERT MULT 6SN7GT
VERT OUTPUT 6W6GT
HORIZ SYNC SEP 12AU7
HORIZ SYNC AMP 6SN7GT
HORIZ OSC
HORIZ OUTPUT 6BQ6GT
HV RECT 1B3GT
DAMPER 6W4GT
LV RECT 5U4G
LV RECT 5U4G
21MP4
SW ON VOLUME CONTROL
SW ON FRINGE COMP CONTROL
FRINGE COMP CONTROL
VOLUME CONTROL
PHONO INPUT
VERT. HOLD CONTROL
VERT. SIZE CONTROL
VERT. LINEARITY CONTROL
HORIZ. HOLD CONTROL
HORIZ. FREQ.
HORIZ. PHASE
HORIZ. OSC ADJ. CONT.
CONTRAST CONTROL
BRIGHTNESS CONTROL
FOCUS CONTROL
WIDTH
ION TRAP CENTERING MAGNET
DEFLECTION YOKE
DO NOT MEASURE
A MEASURED WITH VTVM
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROL 3 SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 30,000 ohms per volt. AC voltage measured at 1,000 ohms per volt.
2. The numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, No signal applied.
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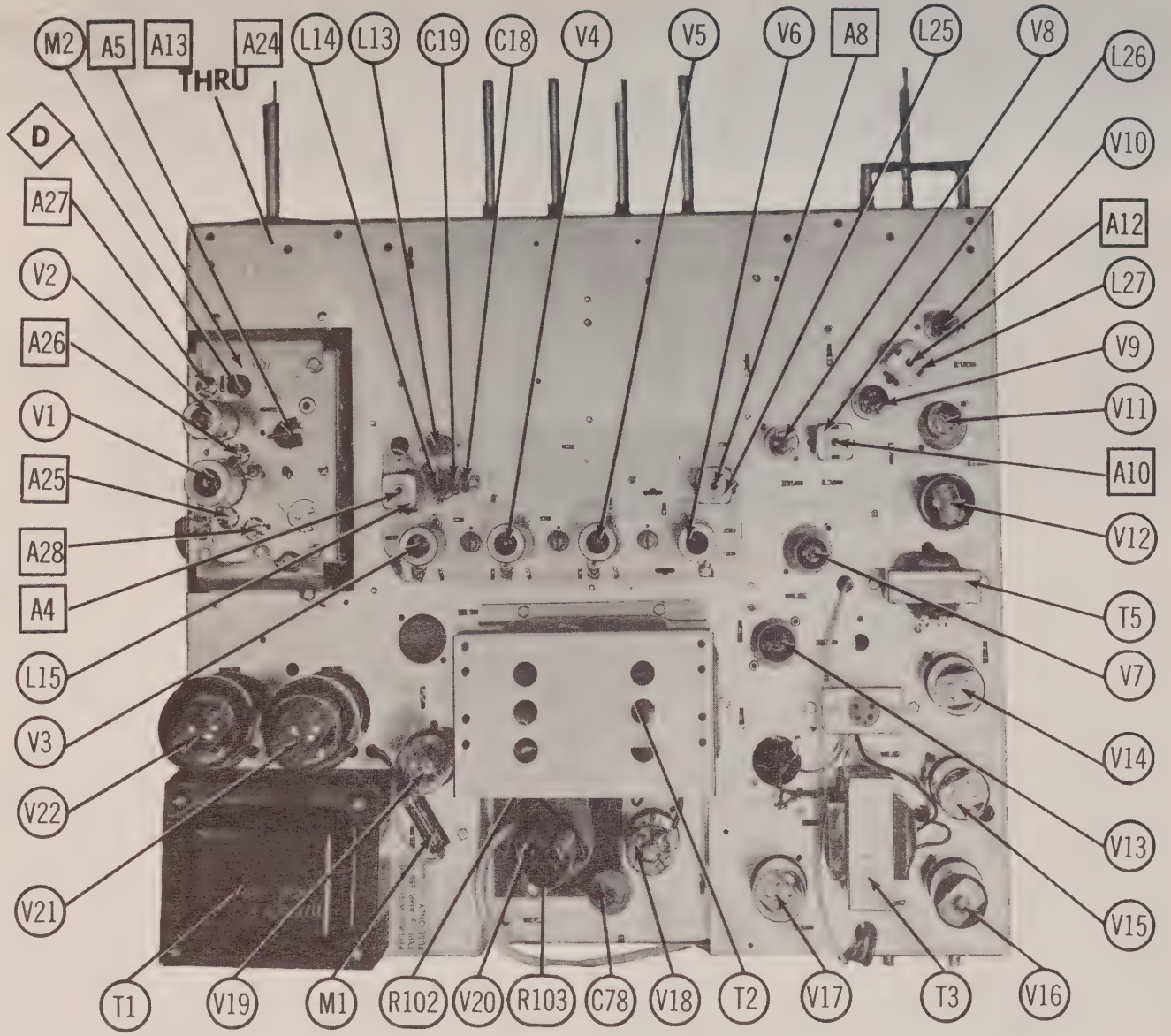
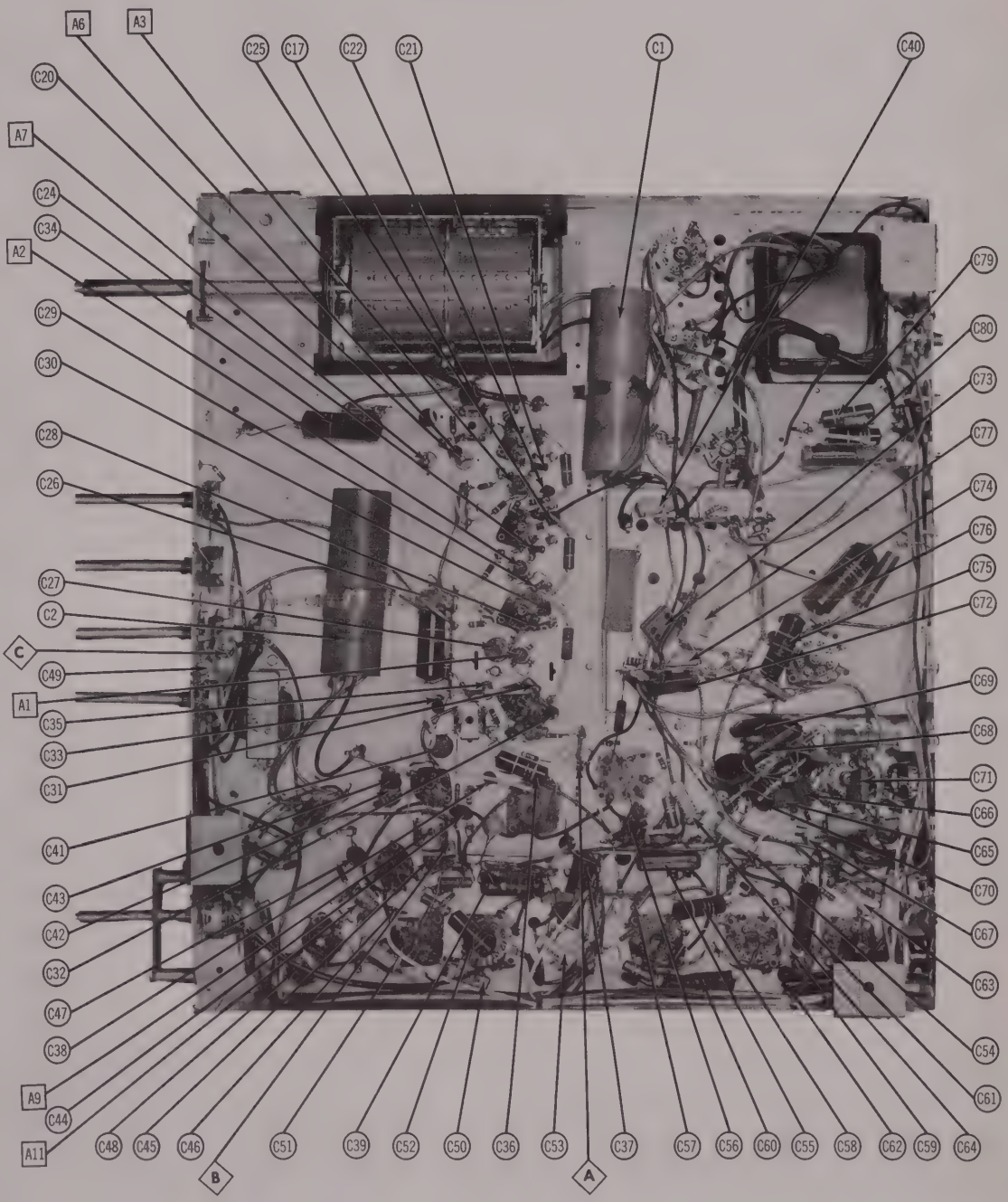


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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TUBE PLACEMENT CHART

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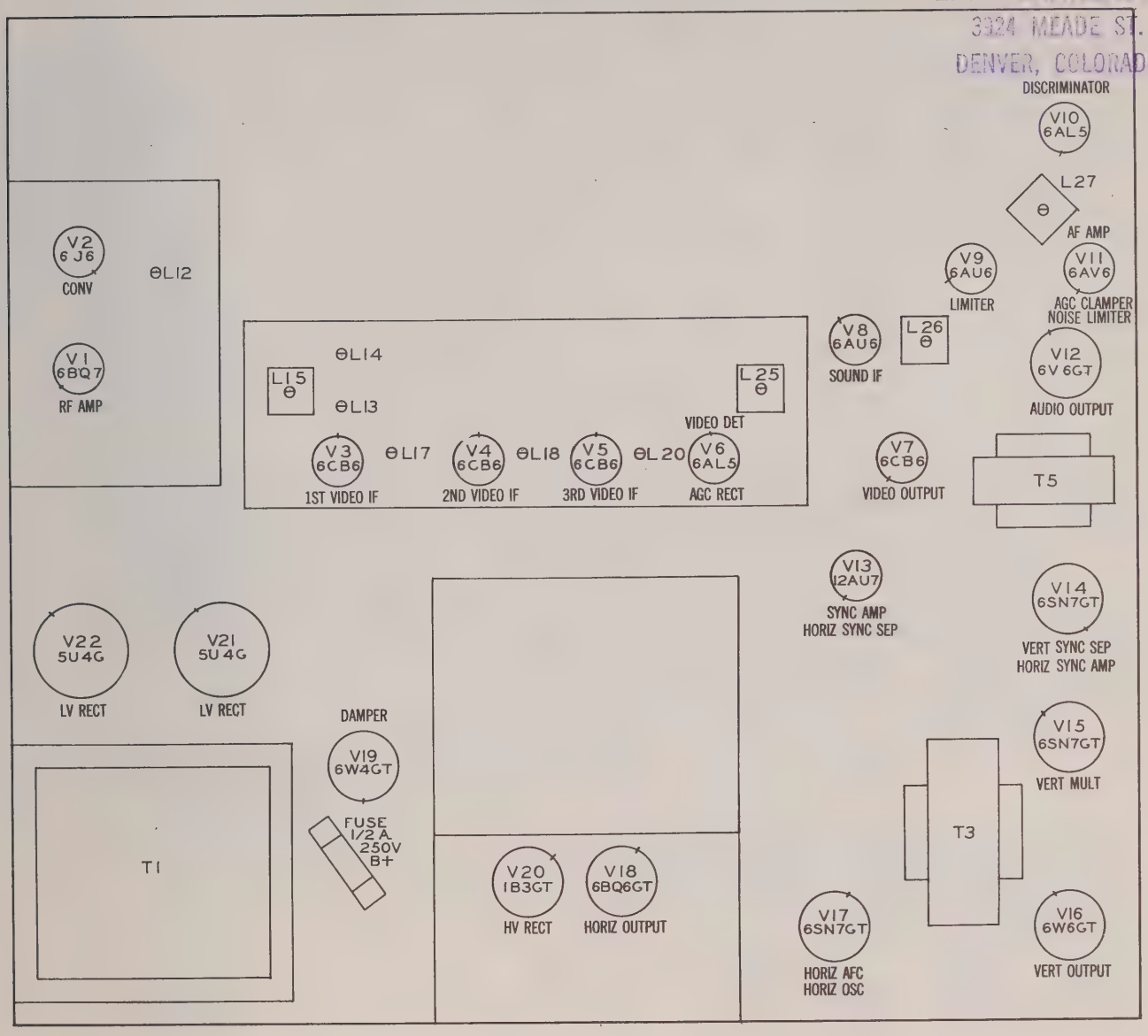


TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, No sound - V21, V22, (Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic., No sound, Has raster - V2, V3, V4, V5, V6
No pic., No sound, Has snow - V1, V2, V3
No pic., Has sound, Has raster - V7, V23
Has pic., No sound - V8, V9, V10, V11, V12
Overloaded picture- V6, V11

SYNC FAILURE
No vert. sync - V14, V15
No horiz. sync - V13, V14, V17
No vert or horiz. sync - V13

SWEEP FAILURE
No raster, Has sound - V17, V18, V19, V20, V23
No vertical deflection - V16
Poor vert linearity or foldover - V15, V16
Poor horiz. linearity or foldover -. V17, V18, V19
Narrow picture - V17, V18, V19, V20, V21, V22
Vert off freq. - V14, V15
Horiz. off freq. - V13, V14, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V17.

VIDEO IF ALIGNMENT

Remove the converter tube, V2 from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C23. Connect the positive lead to chassis.
Sets having chassis coded ⟨F⟩ or succeeding letters, use other alignment frequencies. Where these appear in the alignment procedure they will be indicated by an asterisk (*).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	45.75MC (Unmod.)	Any	DC probe to point ⟨A⟩. Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	43.2MC	"	"	A2	"
3.	"	"	45.3MC 42MC *	"	"	A3	"
4.	"	"	42MC 45MC *	"	"	A4, A5	"
5.	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.
6.	"	"	47.25MC (400∿ AM)	"	USE SCOPE Vert. Amp. to point ⟨A⟩. Low side to chassis.	A7	Adjust for MINIMUM vertical response on scope.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC 47.25MC	Any	Vert. amp. to point ⟨A⟩. Low side to chassis.		Check for response curve similar to fig.1. with 45.75MC marker 60 to 70% down. If necessary retouch A3 (A1 in sets coded ⟨F⟩*) for desired response within limits as shown.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to pin 7 (plate) of 6AL5 (V6). Low side to chassis.	Not used.	4.5MC (Unmod.)	Any	Use VTVM. DC probe to point ⟨B⟩. Common to chassis.	A8, A9 A10	Adjust for maximum deflection.
9.	"	"	4.5MC (450KC Swp)	4.5MC	"	Vert. amp. thru 10KΩ to point ⟨C⟩. Low side to chassis.	A11, A12	Adjust A12 so that 4.5MC occurs at center of crossover lines as per Fig. 2. Adjust A11 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove dummy converter tube and replace original 6J6 in its socket.
Leave 3 volt bias battery connected as in Video IF Alignment. Also, connect the negative lead to the ungrounded side of C34.
The channel adjustment screws are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point ⟨A⟩. Low side to chassis.	A13	Adjust to place video marker 60% to 70% down on high frequency side of response curve as in fig. 3.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A14	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A15	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A16	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A17	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A18	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A19	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A20	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A21	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A22	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A23	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A24	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Leave bias battery connected as under Oscillator alignment.
Connect rhe synchronized sweep voltage form the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point ◇D.	A25, A26, A27	Adjust for response curve similar to fig. 4, with markers above 90%.
12.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response curve similar to fig. 4. If markers fall below 70% on any channel make slight compromise adjustments of A25, A26 and A27 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

IF TRAP ALIGNMENT

The IF Trap is for the purpose of reducing interference on Channel 2 from transmitters operating in the 40MC band. If such interference is noted on Channel 2 adjust A28 for minimum interference. If no interference is noted adjust A28 to maximum clockwise position.

4.5MC TRAP ALIGNMENT

Sets coded ◇G or succeeding letters, incorporate a 4.5MC trap. Turn the set on and tune in a TV station. If any 4.5MC interference is noted adjust A29 for minimum interference on screen.

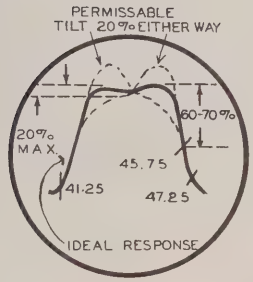


FIG.1

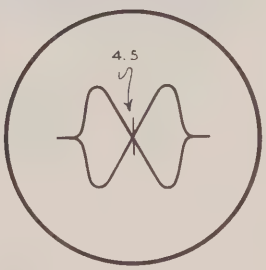


FIG. 2

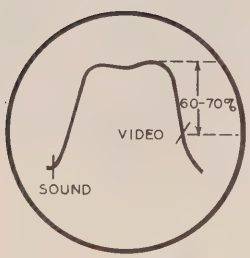


FIG.3

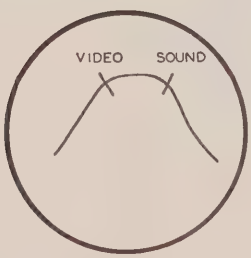
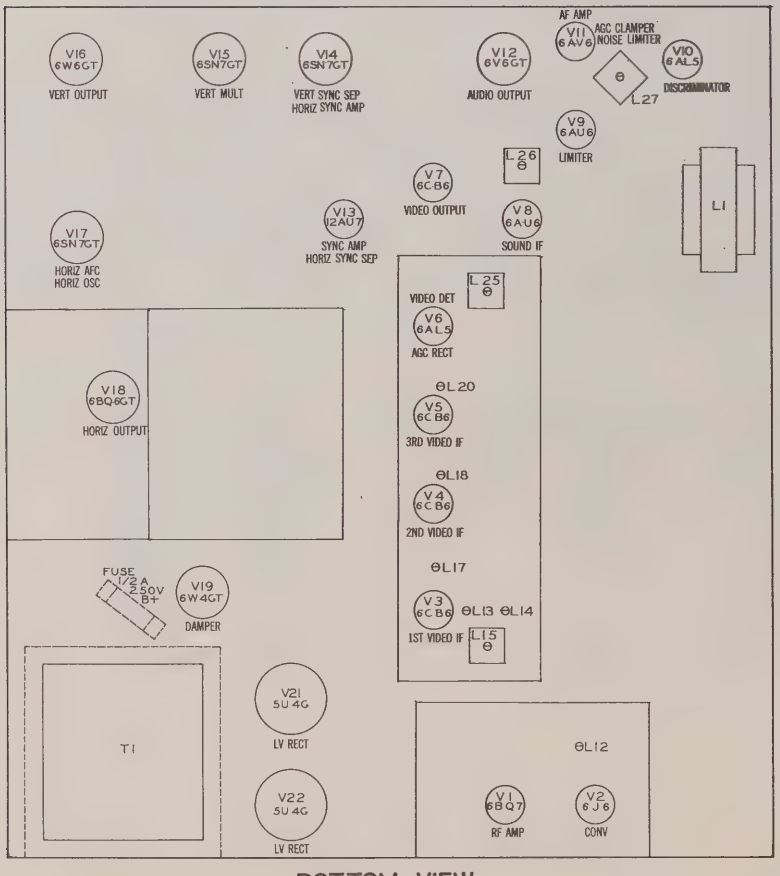


FIG.4

RESISTANCE MEASUREMENTS

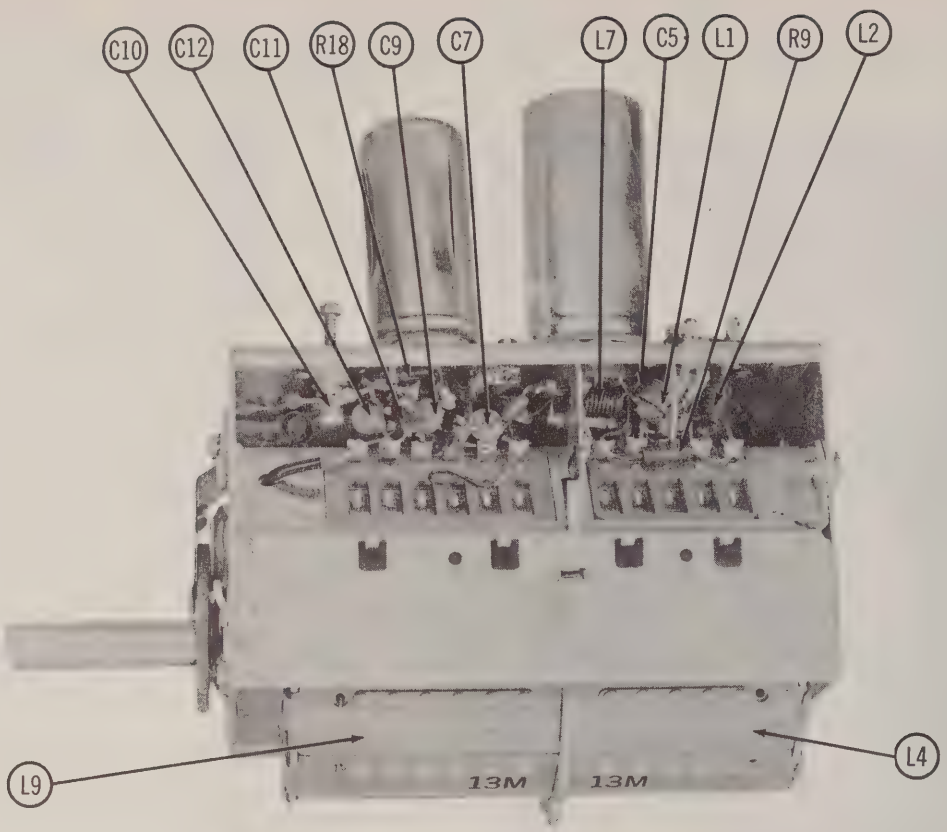
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	2 Meg	0Ω	.1Ω	0Ω	†1KΩ	†220KΩ	INF	0Ω
V 2	6J6	†6KΩ	†16KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	1 Meg	47Ω	.4Ω	0Ω	†1.8KΩ	†1.8KΩ	0Ω		
V 4	6CB6	1 Meg	47Ω	.1Ω	0Ω	†1.8KΩ	†1.8KΩ	0Ω		
V 5	6CB6	.1Ω	180Ω	.4Ω	0Ω	†560Ω	†1.8KΩ	0Ω		
V 6	6AL5	.1Ω	1Meg	.6Ω	0Ω	4.7KΩ	0Ω	4.7KΩ		
V 7	6CB6	1.2Meg	850Ω	.1Ω	0Ω	†6.8KΩ	†1.3KΩ	850Ω		
V 8	6AU6	1 Meg	0Ω	0Ω	.1Ω	†1.8KΩ	†1.8KΩ	220Ω		
V 9	6AU6	47KΩ	0Ω	0Ω	.1Ω	†1.8KΩ	8KΩ	0Ω		
V 10	6AL5	0Ω	100KΩ	0Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 11	6AV6	10Meg	0Ω	0Ω	.1Ω	2Meg	2.1Meg	†220KΩ		
V 12	6V6GT	INF	.1Ω	†1.7KΩ	†1.5KΩ	470KΩ	80KΩ	0Ω	470Ω	
V 13	12AU7	4.2KΩ	2.3Meg	0Ω	.1Ω	.1Ω	†33KΩ	14KΩ	0Ω	0Ω
V 14	6SN7GT	2.2Meg	9KΩ	0Ω	2.4Meg	†10Meg	0Ω	0Ω	.1Ω	
V 15	6SN7GT	150Ω	†150KΩ	2.2KΩ	1.2Meg	†1.8Meg	2.2KΩ	.1Ω	0Ω	
V 16	6W6GT	INF	0Ω	†385Ω	†385Ω	2.2Meg	†800KΩ	.1Ω	1.4KΩ	
V 17	6SN7GT	1.5Meg	†39KΩ	410KΩ	480KΩ	†47KΩ	0Ω	0Ω	.1Ω	
V 18	6BQ6GT	INF	0Ω	INF	†6.8KΩ	470KΩ	INF	.1Ω	100Ω	TopCap #63Ω
V 19	6W4GT	INF	INF	90KΩ	INF	†96Ω	INF	#29Ω	#29Ω	
V 20	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TopCap #773Ω
V 21	5U4G	INF	9.5KΩ	INF	22Ω	INF	22Ω	INF	9.5KΩ	
V 22	5U4G	INF	9.5KΩ	100KΩ	20Ω	8.5Ω	20Ω	INF	9.5KΩ	
V 23	21MP4	0Ω	0Ω	Pin 6 420KΩ	Pin 10 #680KΩ	Pin 11 250KΩ	Pin 12 .1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
FRINGE CONPENSATOR IN OFF POSITION
TV-PHONO SWITCH IN TV POSITION
† MEASURED FROM PINS 8 OF V21 & V22
# MEASURED FROM PIN 3 OF V19

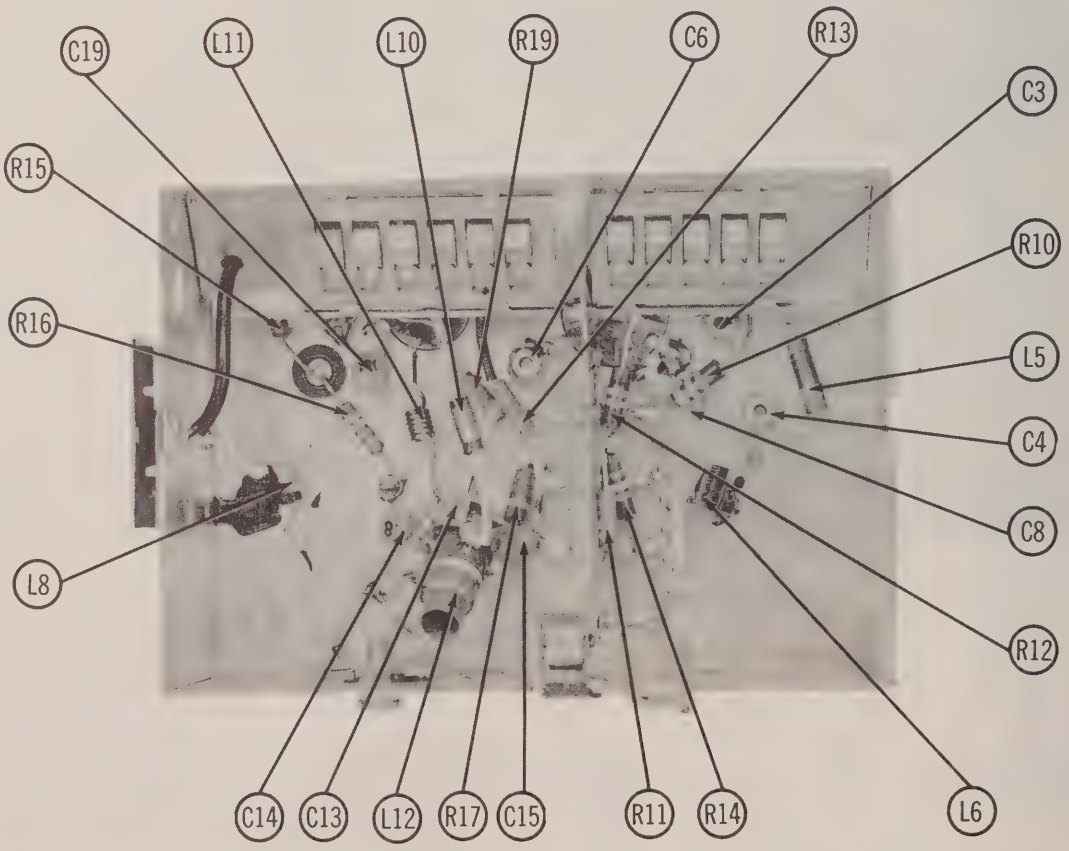


BOTTOM VIEW

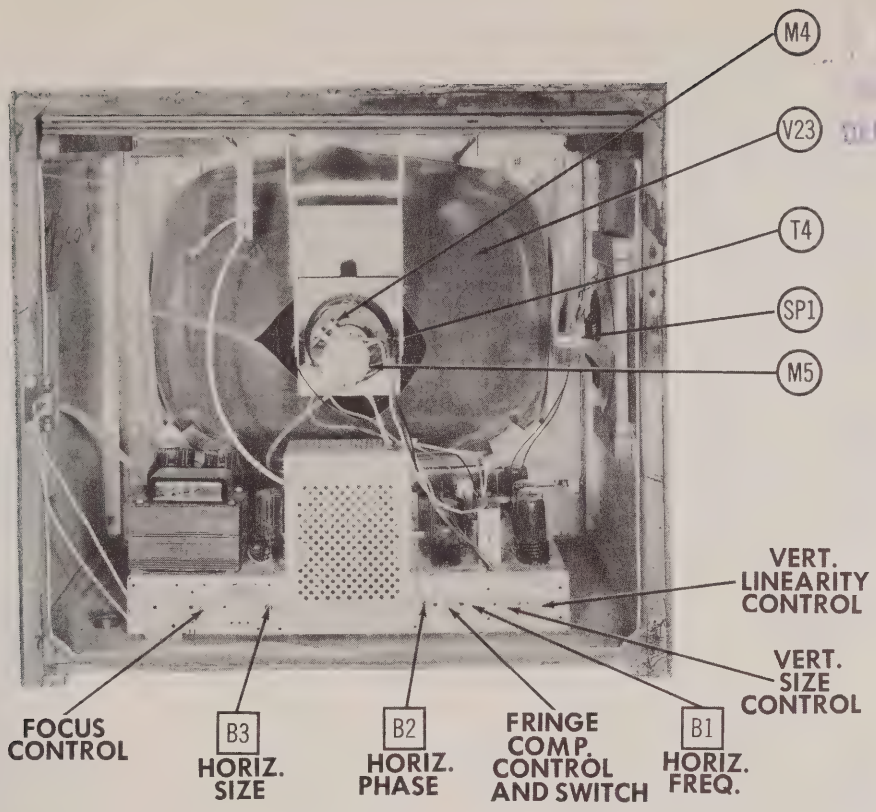
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Turn the Horizontal Hold control fully clockwise.
2. Connect a short across the phasing coil, L29. (On most receivers the coil terminals are accessible on a terminal strip above the chassis. On receivers minus the terminal strip, connect across C72.
3. Starting from fully counter-clockwise position, adjust the Horizontal Freq. slug (B1) clockwise until picture synchronizes.
4. Adjust the Horizontal Size slug (B3) if necessary, for a picture slightly wider than the picture mask. If picture falls out of sync readjust B1 slightly.
5. Remove the short from phasing coil and starting from maximum counter-clockwise position, adjust the Horizontal Phasing slug (B2) clockwise until picture falls into sync.
6. Remove signal by momentarily switching to a another channel and back. If picture is out of sync, adjust B2 until picture locks into sync.
7. Check other available channels as in step 6, readjusting B2 if necessary, until sync holds for each channel.

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push-on type control knobs from front panel.
2. Remove 8 wood screws. Remove rear cover.
3. Disconnect built-in antenna and Speaker.
4. Disconnect HV lead, Yoke plug, Horiz. input plug and CRT. socket.
5. Loosen 2 wood screws. Remove antenna bracket.
6. Loosen 2 clamps. Remove Speaker and mounting board.
7. Remove 4 Chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

PROPERTY OF
E. PLANKENSHIP
3924 LEADE ST.
DENVER, COLORADO

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	800065	6BQ7	9AJ	
V2	Converter	[illegible]	6J8	7BF	
V3	1st. Video IF Amp.	800055	6CB6	7CM	
V4	2nd. Video IF Amp.	800055	6CB6	7CM	
V5	3rd. Video IF Amp.	800055	6CB6	7CM	
V6	Video Detector-AGC Rectifier	[illegible]	6AL5	6BT	
V7	Video Output	800055	6CB6	7CM	
V8	Sound IF Amp.	800532	6AU6	7BK	
V9	Limiter	800533	6AU6	7BK	
V10	Discriminator	800541	6AL5	6BT	
V11	AF Amplifier-AGC Clamper-Noise Limiter	800057	6AV6	7BT	
V12	Audio Output	800370	6V6GT	7AC	
V13	Sync Amplifier-Horiz.Sync Sep.	800026	12AU7	9A	
V14	Vert.Sync Amp.-Horiz. Sync Amp.	800380	6SN7CT	8BD	
V15	Vert. Mult.	[illegible]	6SN7GT	8BD	
V16	Vert. Output	[illegible]	6W6GT	7AC	
V17	Horiz.AFC-Horiz. Oscillator	[illegible]	6SN7GT	8BD	
V18	Horiz. Output	800059	6DQ6GT	6AM	
V19	Damper	800037	6W4GT	4CG	
V20	HV Rectifier	800450	1B3GT	3C	
V21	LV Rectifier	800290	5U4G	5T	
V22	LV Rectifier	[illegible]	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V23	21MP4			12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	300	925238	AFH3-44		UPT44445		FP377	TVL-3787	Red
B	40	300								Blue
C	40	300								Green
C2A	40	250	925231	AFH3-48		UPT84245	-FP378		TVL-3792	Blue
B	10	450		PRS50/100		BRS501	LTC3501		LTVA-1310	Yellow
C	100	50								Green
D	80	300								Red
C3	3-8				829-10					
C4	3-8				829-10					
C5	3.3			SI3.3NP0	TCZ-3.3	NP0K-3R3		ZT-5553	5TCCB-V33	
C6	.5-3				828-3			CT565A		
C7	130			SI120	D6-131	TW5T12	GP3K-121	UC-5312	5GA-T12	
C8	1000			BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C9	47			SI47	D6-470	TW5Q5	GP3K-470	UC-5447	5GA-Q47	
C10	.5-3				829-3			CT565A		
C11	10									
C12	5									
C13	1000			BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C14	6.8			SI6.8NP0	TCZ-6.8	NP0K-6R8		ZT-5568	5TCCB-V68	
C15	1000			BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C16	1000			BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C17	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C18	39		928062		TCN-39		N750K-390			
C19	5		928017	SI5N750			N750K-050	NT-555	5TCUB-V5	
C20	1000		928077	BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C21	470		928081	SI470	D6-471	TW5T5	GP2K-471	UC-5347	5GA-T47	
C22	1000		928077	BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C23	.22	200	922335	P488-22		PTE4P22		PT4025	2TM-P22	
C24	470		928081	SI470	D6-471	TW5T5	GP2K-471	UC-5347	5GA-T47	
C25	1000		928077	BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C26	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C27	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	Note 1
C28	680		928076	SI680	D6-681	IW5T7	GP2K-681	UC-5368	5GA-T68	
C29	680		928076	SI680	D6-681	IW5T7	GP2K-681	UC-5368	5GA-T68	
C30	1000		928077	BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C31	22		928012	SI22	D6-220	5W5Q25	GP3K-220	UC-5423	5GA-Q22	
C32	1000		928077	BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C33	1000		928077	BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C34	.22	200	922325	P488-22		PTE4P22		PT4025	2TM-P22	
C35	5		928017	SI5NP0	TCZ-4.7	NP0K-050		ZT-555	5TCCB-V47	
C36	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C37	.1	300	922315	P288-1	DF-104	PJT2P1		PT401	2TM-P1	
C38	1000		928077	BPD-001	DD-102	TW5D1	801-001	DC-521	5HK-D1	
C39	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C40	.01	800	922714	P688-01	D6-103	PTE6S1	GP3-333-103	PT61	6TM-S1	
C41	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C42	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C43	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C44	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C45	68	500	910231	1469-00007	D6-680	5W5Q7	GP1K-680	UC-5468	M5-47	
C46	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C47	5000		928109	BPD-005	DD-502	TW5D5	811-005	DC-525	5HK-D5	
C48	10	500	910043							
C49	.001	400	922513	P858-001	D6-102	PTE8D1	GP2L-102	PT621	6TM-D1	
C50	.0047	400	922553	P888-0047	D6-472	PTE8D47	GP3-333-472	PTE847	6TM-D47	
C51	.001	400	922513	P858-001	D6-102	PTE8D1	GP2L-103	PT621	6TM-D1	
C52	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C53	.0047	400	922553	P888-0047	D6-472	PTE8D47	GP2-333-472	PTE847	6TM-D47	
C54	.01	400	922514	P488-01	D6-103	PTE8S1	GP2-333-103	PT611	6TM-S1	
C55	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C56	220	500	910062	1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C57	47	500	910058	1469-00005		5R5Q5		MCB233	MS-45	
C58	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C59	.0047	400	922453	1494-005		IDH5D5		MCB465	MS-25	
C60	.047	200	922354	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C61	.047	400	922454	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C62	.1	400	922515	P488-1	DF-104	PTE4P1		PT401	4TM-S1	
C63	.01	800	922714	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C64	.01	400	922514	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C65	82	500	910056							
C66	82	500	910056							
C67	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C68	.047	400	922554	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C69	.022	200	922324	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C70	.47	200	922355	P288-47		PJT2P5		PT405	2TM-P47	
C71	270	500	910046	1469-00003		5R5T3		MCB241	MS-33	
C72	.01	800	922041	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C73	820	500	910218					MCK382		
C74	.001	800	922413	P688-001	D6-102	PTE8D1	GP2L-102	PT621	6TM-D1	
C75	.1	400	922515	P488-1	DF-104	PTE4P1		PT401	4TM-S1	
C76	.47	200	922355	P288-47		PJT2P5		PT405	2TM-P47	Note 2
C77	.1	800	922715	P688-1	DF-104	PTE8P1		PT601	6TM-P1	
C78	500	20000	923016	HV30C	TV3-502	MMC-20T5	413-501		20DK-75	
C79	.047	400	922200	489ZGXY-05		P34S47		PT4147	4TM-S47	
C80	.047	400	922200	489ZGXY-05		P34S47		PT4147	4TM-S47	

Note 1. Chassis using code Triangle D , replace C27 with straight wire and remove RJ3.
Note 2. Chassis using code Triangle H , use a .22MFD in this application.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200KΩ	½	390181	QII-129	AG-51-8	AB-46	U-43	Brightness
B	Shaft		Not Req.	C3	KSS-5	AK-4	DS-36	Attach to R1A
R2A	1 Meg	½	390156	QII-137	AG-51-S	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	C3	KSS-5	AK-4	DS-36	Attach to R2A
R3A	500KΩ	½	390183	QII-133	AG-44-8	AB-51	U-35	Horiz. Hold
B	Shaft		Not Req.	C3	KSS-5	AK-4	DS-36	Attach to R3A
R4A	5000Ω	2	390197	W-5000	A43-5000	VK-135	R5000L	Vert. Linearity-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4"	Not Req.	Not Req.	Attach to R4A
R5A	2 Meg	½	390196	QII-139	AG-83-8	AB-75	SU-56	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2 Meg	½	390196	QII-139	AG-83-8	AB-75	SU-56	Focus
B	Shaft		Not Req.	NotReq.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	2 Meg	½	390202	QII-139	AG-83-8	AB-75	U-56	Fringe Compensator
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
C	Switch		Not Req.	76-1	SWB	KB-1	U8-36	Attach to R7A
R8A	1500Ω		390201	*	RTV-296	SBB-701-8	UF15L	Contrast-Panel
B	1 Meg	½					UR16A	Volume-Rear
C	Switch						UR-26	Attach to R8B

* CONCENTRKIT EQUIVALENT - KIT K2, BASE ELEMENTS AND SHAFTS , B11-109 & P1-224 (Panel)
B13-137 & R1-308(Rear) & SWITCH 76-1
** USE C3 COUPLER WITH PART OF ORIGINAL SHAFT TO OBTAIN REQUIRED SHAFT LENGTH

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R9	15KΩ				
R10	47KΩ				
R11	330KΩ			BTS-330K	
R12	100KΩ			BTS-100K	
R13	470Ω			BTS-470	
R14	180KΩ			BTS-180K	
R15	15KΩ				Note 6
R16	220KΩ			BTS-220K	
R17	15KΩ				
R18	10KΩ				
R19	4700Ω			BTS-4700	
R20	470Ω		350413	BTS-470	
R21	470Ω		350413	BTS-470	
R22	15Ω		340052		
R23	47Ω		340172		
R24	470Ω		350412	BTS-470	
R25	470Ω		350412	BTS-470	
R26	470Ω		350413	BTS-470	
R27	27KΩ		340832		
R28	47Ω		340172		
R29	470Ω		350413	BTS-470	
R30	8200Ω		340712	BTS-8200	
R31	180Ω		340312	BTS-180	
R32	470Ω		350412	BTS-470	
R33	470Ω		350412	BTS-470	Note 1
R34	1 Meg		351212	BTS-1 Meg	
R35	1 Meg		351212	BTS-1 Meg	
R36	1 Meg		351212	BTS-1 Meg	
R37	4700Ω		340852	BTS-4700	
R38	15KΩ		340772	BTS-15K	
R39	9100Ω				Note 2
R40	1 Meg		351212	BTS-1 Meg	
R41	330KΩ		351052	BTS-330K	
R42	8.2Ω	5	394122		
R43	22KΩ		340812	BTS-22K	
R44	6800Ω 5%		770692	BTS-6800 5%	
R45	470KΩ		351132	BTS-470K	
R46	470KΩ		351132	BTS-470K	
R47	680KΩ 5%		351172	BTS-680K 5%	
R48	220Ω		340332	BTS-220	
R49	470Ω		350412	BTS-470	
R50	47KΩ		350892	BTS-47K	
R51	1 Meg		351212	BTS-1 Meg	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R52	9100Ω				Note 2
R53	9100Ω				Note 2
R54	15KΩ	1	370772	BTA-15K	Note 9
R55	470Ω	1	350412	BTS-470	
R56	100KΩ	1	340972	BTS-100K	
R57	100KΩ	1	340972	BTS-100K	
R58	68KΩ	1	350932	BTS-68K	
R59	10 Meg	1	351452	BTS-10Meg	
R60	10 Meg	1	351452	BTS-10Meg	
R61	220KΩ	1	351052	BTS-220K	
R62	470KΩ	1	351132	BTS-470K	
R63	4700Ω	1	370412	BTA-470	
R64	1500Ω	2	790532	BTB-1500	
R65	100KΩ	1	350972	BTS-100K	
R66	33KΩ	1	380852	BTA-33K	
R67	100KΩ	1	350972	BTS-100K	
R68	10KΩ	1	350732	BTS-10K	
R69	100KΩ	1	340972	BTS-100K	
R70	10 Meg	1	351452	BTS-10Meg	
R71	150Ω	1	340292		
R72	2200Ω	1	340572	BTS-2200	
R73	150KΩ	1	341012	BTS-150K	
R74	680KΩ	1	341172	BTS-680K	
R75	1 Meg	1	351212	BTS-1 Meg	
R76	47KΩ	1	350892	BTS-47K	
R77	12KΩ	1	350752	BTS-12K	
R78	2.2Meg	1	351292	BTS-2.2Meg	
R79	470Ω	1	370412	BTA-470	
R80	220KΩ	1	351052	BTS-220K	
R81	2.2Meg	1	351292	BTS-2.2Meg	
R82	22KΩ	1	370812	BTA-22K	
R83	4700Ω	1	340852	BTS-4700	
R84	2.2Meg	1	351292	BTS-2.2Meg	
R85	27KΩ	1	370832	BTA-27K	
R86	12KΩ	1	340752	BTS-12K	Note 8
R87	330KΩ	1	341032	BTS-330K	
R88	820KΩ	1	341192	BTS-820K	
R89	82KΩ-5%	1	340952	BTA-82K-5%	
R90	330KΩ	1	341032	BTS-330K	
R91	3900Ω	1	340832	BTS-3900	
R92	150KΩ	1	341012	BTS-150K	
R93	180KΩ-5%	1	340332	BTS-180K-5%	Note 7
R94	150KΩ	1	341012	BTS-150K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R101	33KΩ	½	350852	BTS-33K	
R102	39Ω	½	340152	BTS-39	
R103	470KΩ	1	380972		Note 4 & 5
R104	12500Ω	10	394116	1 3/4A-12500	
R105	100KΩ	1	380972	BTA-100K	
R106	100KΩ	1	340972	BTS-100K	Note 10

Note 1. Chassis coded Triangle D, R33 is omitted
Note 2. Some models use a 10KΩ resistor in this application, chassis coded Triangle J use a 6800Ω resistor.
Note 3. Some models use a 820KΩ resistor in this application.
Note 4. Chassis coded Triangle B, R103 is omitted and Hi-Voltage lead is connected to pin 7 of V20.
Note 5. Chassis coded Triangle C , R103 is changed to 100KΩ - 1Watt.
Note 6. Some models use a 22KΩ resistor in this application.
Note 7. Chassis coded Triangle I use a 330KΩ resistor in this application.
Note 8. Chassis coded Triangle I use a 10KΩ resistor in this application.
Note 9. Chassis coded Triangle J use a 22KΩ resistor in this application.
Note 10. Used only in chassis coded Triangle J .

TRANSFORMER (POWER)

ITEM No	RATING: PRI	RATING: SEC 1	RATING: SEC 2	RATING: SEC 3	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
T1	117VAC	456VCT	5VAC	6.3VAC	730037				
	@1.8A	250ADC	@6.5A	@2.2A					
			SEC 4	SEC 5					
			6.3VAC	6.3VAC					
			@4.4A	@4.8A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI	RATING: DC RESISTANCE SEC	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T2	740Ω tap @.30A	46Ω tap ⑥ 50,1Ω	738068	A-8130 ①	HVO-7 ②	TFB-5 ③	D-14 ④	Horiz. Output Trans.
		SEC 2 0Ω						
T3	298Ω tap @.8A		738066	A-8115 ⑤⑦	A-3038 ⑤	TSO-2 ⑤⑧	A-101U ⑤⑧	Vert. Output Trans.
T4A	28Ω		708137		MDF-71 ⑨	TY-7	Y-19	Horiz. Deflection Coils
B	45Ω							Vert. Deflection Coils

① Use with width coil WC-5
② Use with width coil MWC-1
③ Use width coil with approx. range of 4 to 29 millihenries
④ Use width coil WC-11
⑤ Tie red and yellow leads together
⑥ Drill new mtg. holes.
⑦ Alter Horiz. Deflection Network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI	RATING: IMPEDANCE SEC.	RATING: DC RES PRI	RATING: DC RES SEC.	REPLACEMENT DATA: EMERSON PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T5	4.6KΩ	3.6Ω	265Ω	.58Ω	734074	A-3877 ①	A-2930 ①	RO-8 ①	S-3X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C IMP	REPLACEMENT DATA: EMERSON PART No.	JENSEN PART No.	QUAM PART No	NOTES
SP1	6"	PM	3.6Ω	180041C 180041 ① 180050 ②	5T-108 Mod. P6- X	6A1	① Alternate 6" PM Speaker ② 12" PM Speaker for Model 730B

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT (1000 ~\)	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No
L1	225A	88Ω	1.8 Hy	737017 737016 ①	C-2327	C-2974 ②	TH-133 ②	C-25A

① Alternate choke
② Drill one new mtg. hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	EMERSON PART No.	MERIT PART No.	IRC PART No.	
L2	FM Trap	0Ω					
L3	FM Trap	0Ω					
L4	Ant. Coils	0Ω					
L5	Grid Choke	1.9Ω					
L6	Fil. Choke	0Ω					
L7	Neutralizing Coil	0Ω					
L8	Fil. Choke	0Ω					
L9	RF, Mixer Grid & Osc. Coils	0Ω					
L10	Feedback Coil	1Ω					
L11	RF Choke	0Ω					
L12	Converter plate Coil	.1Ω	.1Ω				
L13	Adj. Channel Sound Trap	0Ω		720154			
L14	Sound Carrier Trap	0Ω		720149			
L15	1st. Video IF	.1Ω		720147			
L16	Fil. Choke	.44Ω		705020		CLA	.68 Microhenry
L17	2nd. Video IF	.1Ω	.1Ω	720148			
L18	3rd. Video IF	.1Ω	.1Ω	720148			
L19	Fil. Choke	.44Ω		705020		CLA	.68 Microhenry
L20	4th. Video IF	.1Ω	.1Ω	720148			
L21	Fil. Choke	.44Ω		705020		CLA	.68 Microhenry
L22	Shunt Peaking Coil	15Ω		708114	TV-188		440 Microhenries
L23	Series Peaking Coil	11Ω		708100	TV-185		250 Microhenries
L24	Shunt Peaking Coil	15Ω		708114			440 Microhenries (660 Microhenries in Triangle F)
L25	1st. Sound IF	8.5Ω	3Ω	720146	TV-113		
L26	2nd. Sound IF	1.7Ω	1.7Ω	720081 *			
L27	Discriminator	1.7Ω	1.7ΩCT	708018 ‡			
L28	Horiz. Osc.	135Ω		716073			Tapped @ 35Ω
L29	Horiz. Phase Coil	35Ω		738065 ■			
L30	Width Coil	4Ω		708156			
L31	RF Choke	8.2Ω		705021		CL-1	10 Microhenries
L32	4.5MC Trap			708037			Used in Triangle G

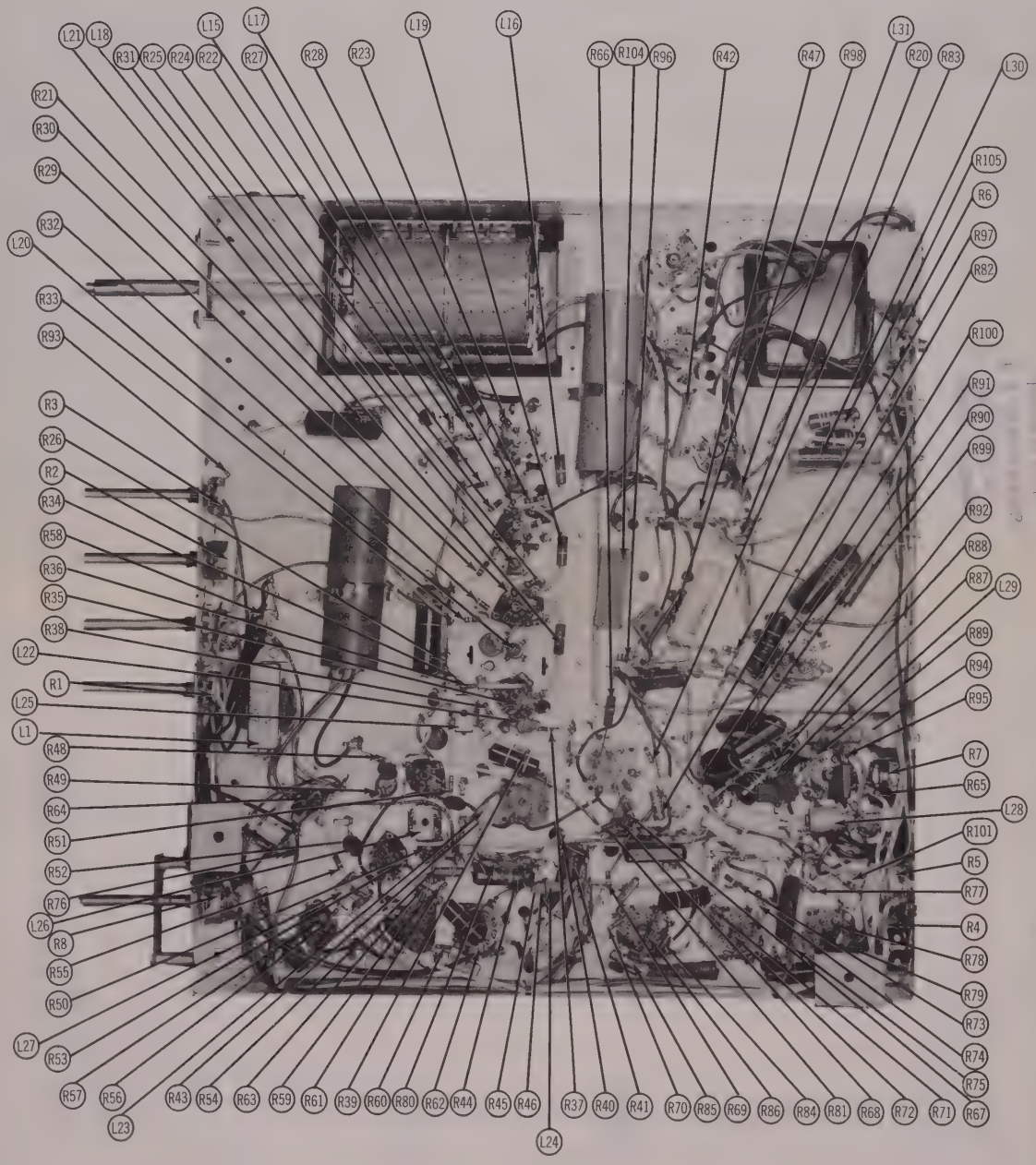
* Alternate part #720081A
‡ Alternate part #708151
■ Alternate part #708158 and 738071

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			EMERSON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	Bel	1/2 A 250V	808003		312.500 (3AG)	357001	AGC-1/2	4405

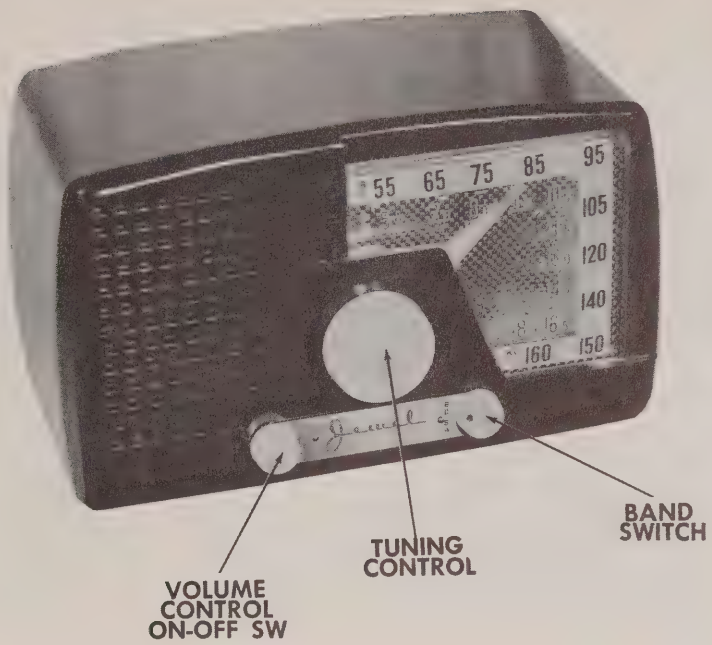
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	RF Tuner	470696	
M3	Switch	510091	TV-Phono
M4	Centering Magnet	708133	
M5	Ion Trap	708129	
	Knob	450133	Channel Selector (Shank)
	Knob	460261	Channel Selector (Flange)
	Knob	450134	Off/on Volume (Shank)
	Knob	460262	Off/on Volume (Flange)
	Knob	450137	Fine Tuning
	Knob	450138	Contrast
	Knob	450034	TV-Phono
	Back Cover	560291	(Masonite)
	Control Door	460252	
	Escutcheon	460318	Control Door
	Spring	587088	For Control Door
	Mask	460249	
	Safety Glass	520161	
	Cabinet	140459	Mahogany Table Model (Model 711B)
	Cabinet	140460	Maple Table Model (Model 712B)
	Cabinet	140474	Mahogany Open Face Console (Model 720B)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. P. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TRADE NAME	Jewel Model 5007
MANUFACTURER	Jewel Radio Co., 10-40 45th. Ave., Long Island City 1, N.Y.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC — RATING .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1630 KC — SHORT WAVE 5.6-19MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning gang fully open and set pointer to coincide with the letters "KC" at high frequency end of dial.
Mark dial background plate at 1600 and 550 KC and 18MC points for reference during alignment.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1) Low side to chassis.	455 KC (400~ Mod.)	BC	Tuning gang fully open	Across Voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1600 KC	"	1600 KC	"	A5	"
3.	"	"	550 KC	"	550 KC	"	A6	Adjust for maximum output. Repeat steps 2 and 3 until no change is noted.
4.		Loop	1400 KC	"	Tune in 1400 KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
5.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1) Low side to chassis.	18MC	SW	18MC	"	A8	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
6.		Loop	16MC	"	Tune to 16MC signal	"	A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

JEWEL
MODEL 5007

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JEWEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JEWEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS150/50-30		EDL5315		2N520	TVA-2450	
B	30	150								
C2	5	250		PRS250/4		BR425		TC50X	TVA-1501	
C3	.005	400		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C4	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C5	100	500		1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C6	3100	500								
C7	250	500		1468-00025	D6-251	5W5T25	GP2K-251	MC240	1FM-325	
C8	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C9	250	500		1468-00025	D6-251	5W5T25	GP2K-251	MC240	1FM-325	
C10	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C11	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C12	.05	400		489ZGXY-05		PJ4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	50-18A	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

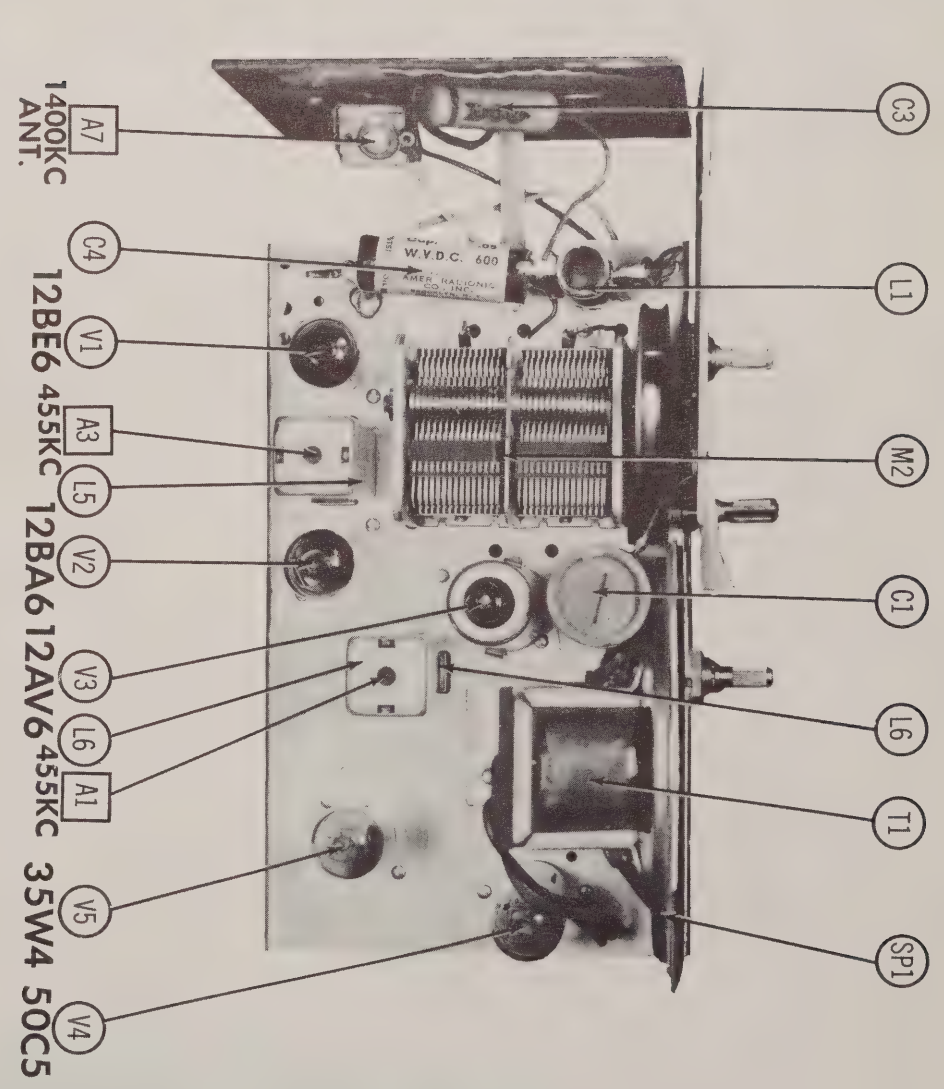
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	NOTES	ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K		R7	470KΩ	½		BTS-470K	
R3	1000Ω	½		BTS-1000		R8	470KΩ	½		BTS-470K	
R4	150Ω	½		BTS-150		R9	150Ω	½		BTS-150	
R5	3.3Meg	½		BTS-3.3Meg		R10	1500Ω	1		BTA-1500	
R6	10Meg	½		BTS-10Meg		R11	22Ω	1			
						R12	47Ω	½			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: JEWEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	3.25KΩ	3.3Ω	220Ω	.5Ω	Part of spkr.	A-3332	A-2998	RO-302 ①	S-1X ①	① Drill one new mtg. hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	JEWEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	80-27A	ST-113 Mod. P4-X	4A07	

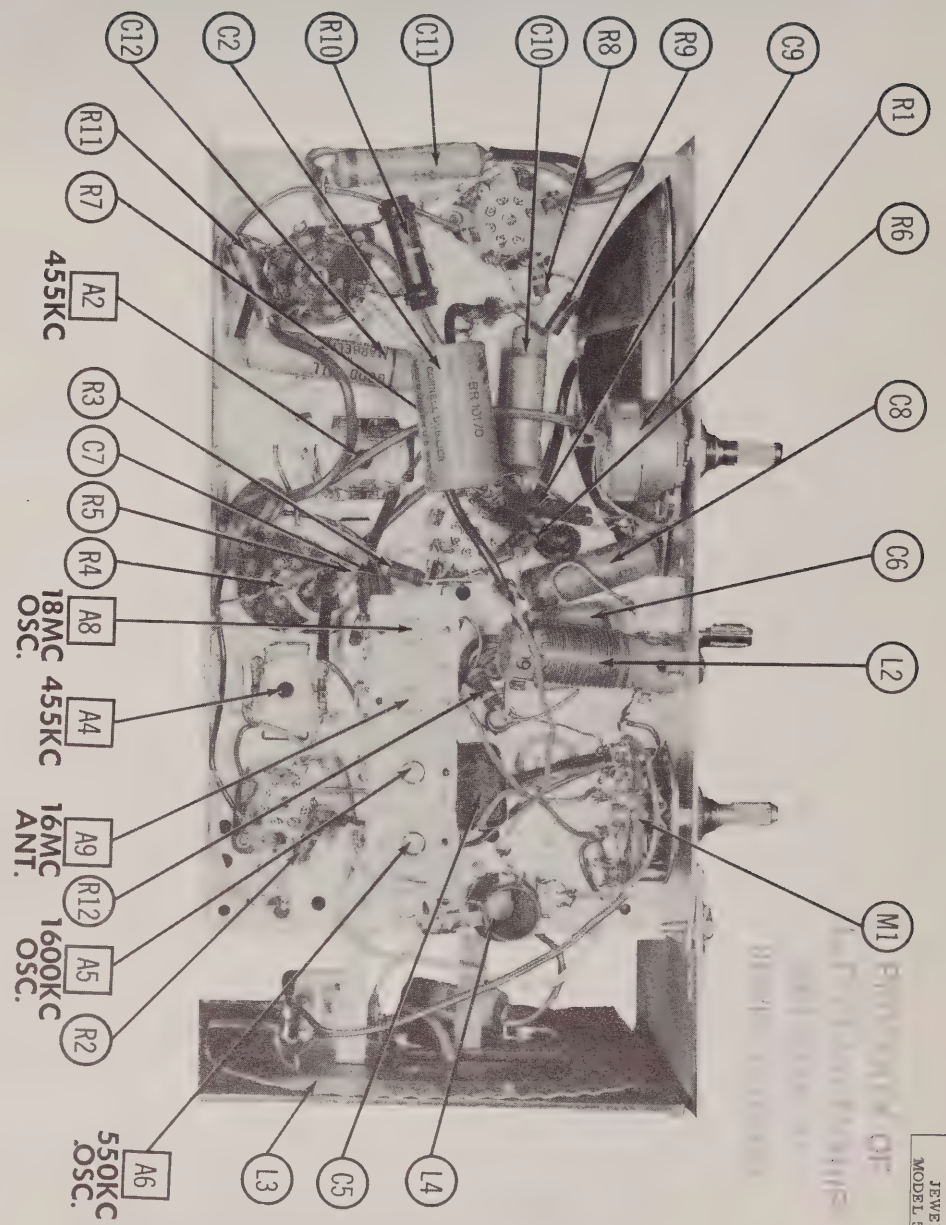
COILS (RF-IF)

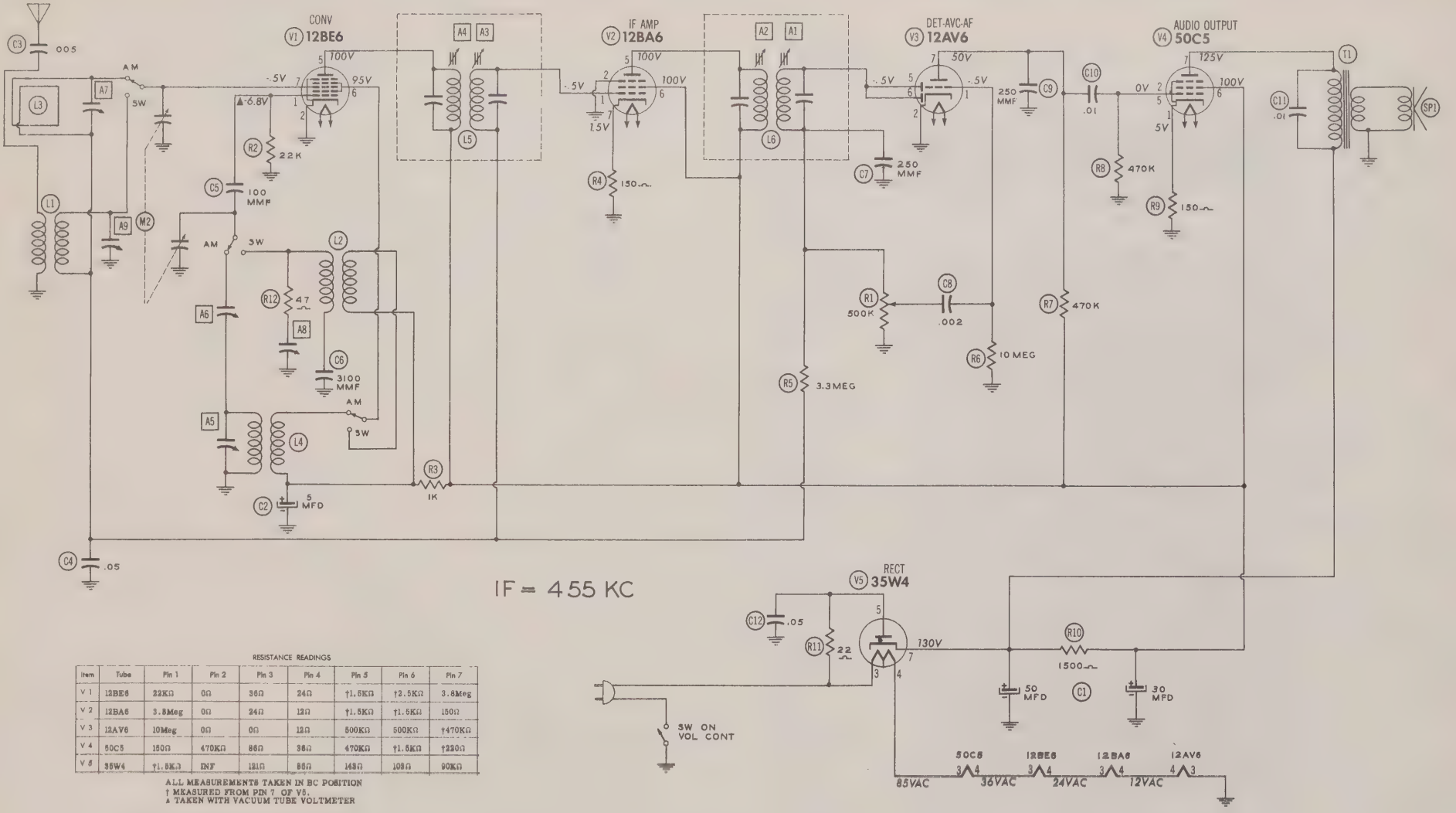
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	JEWEL PART No.	MERIT PART No.	
L1	Sw. Ant. Coil	.2Ω	0Ω			
L2	Sw. Osc. Coil	.2Ω	0Ω			
L3	Loop Ant.	2.5Ω				
L4	BC Osc. Coil	.6Ω	5.4Ω			
L5	Input IF	18Ω	18Ω		BC-352	
L6	Output IF	18Ω	18Ω		BC-353	

MISCELLANEOUS

ITEM No.	PART NAME	JEWEL PART No.	NOTES
M1	Switch		Band Change
M2	2 gang var. cap.		6-471MMF (Each Section)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	0Ω	36Ω	24Ω	†1.5KΩ	†2.5KΩ	3.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	150Ω
V 3	12AV6	10Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	†470KΩ
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	†1.5KΩ	†220Ω
V 5	35W4	†1.5KΩ	INF	12Ω	86Ω	14Ω	10Ω	90KΩ

ALL MEASUREMENTS TAKEN IN BC POSITION
† MEASURED FROM PIN 7 OF V5.
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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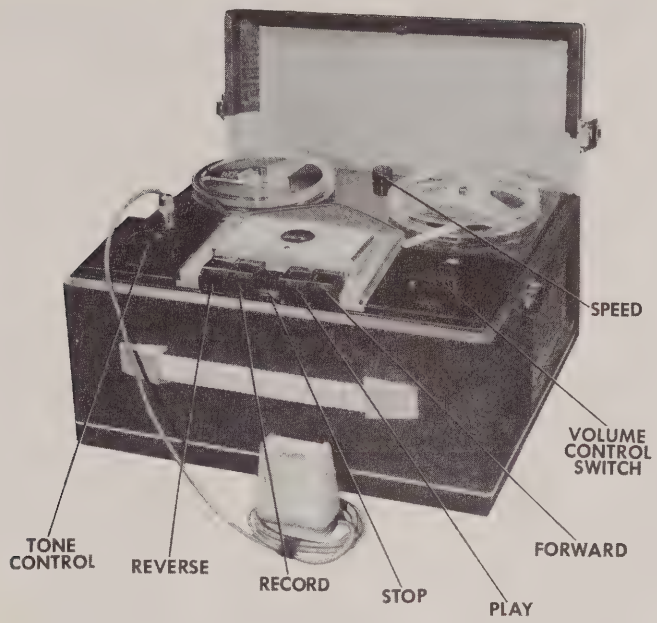
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

KNIGHT
MODEL 96-485



KNIGHT
MODEL 96-485

GENERAL INFORMATION

The Knight 96-485 Tape Recorder features fingertip operation for Fast Forward, Playback, Stop, Record and Fast Reverse. This recorder is designed to Record and Playback two tracks of material on standard width recording tape, which doubles the playing time of the standard 5" or 7" reel of tape with no loss of frequency response or quality. Recordings can be made from an external radio or phonograph in addition to those made directly from the microphone. Recordings can be played back through the self-contained speaker or an external speaker through the Auxiliary Speaker Jack.

Recordings may be made at the speeds of 3-3/4" per second or 7-1/2" per second.

Using both channels of the tape, the recording time for the various speeds is as follows:

Size	Speed 3-3/4	Speed 7-1/2
5 inch reel	1 hr.	1/2 hr.
7 inch reel	2 hrs.	1 hr.

The Knight 96-485 is designed to operate on 60 cycle, 115 volt, AC supply.

Note: Severe damage will result if connection is made to a direct current (DC) line.

Allied Radio Corporation
833 West Jackson Blvd.,
Chicago 7, Illinois

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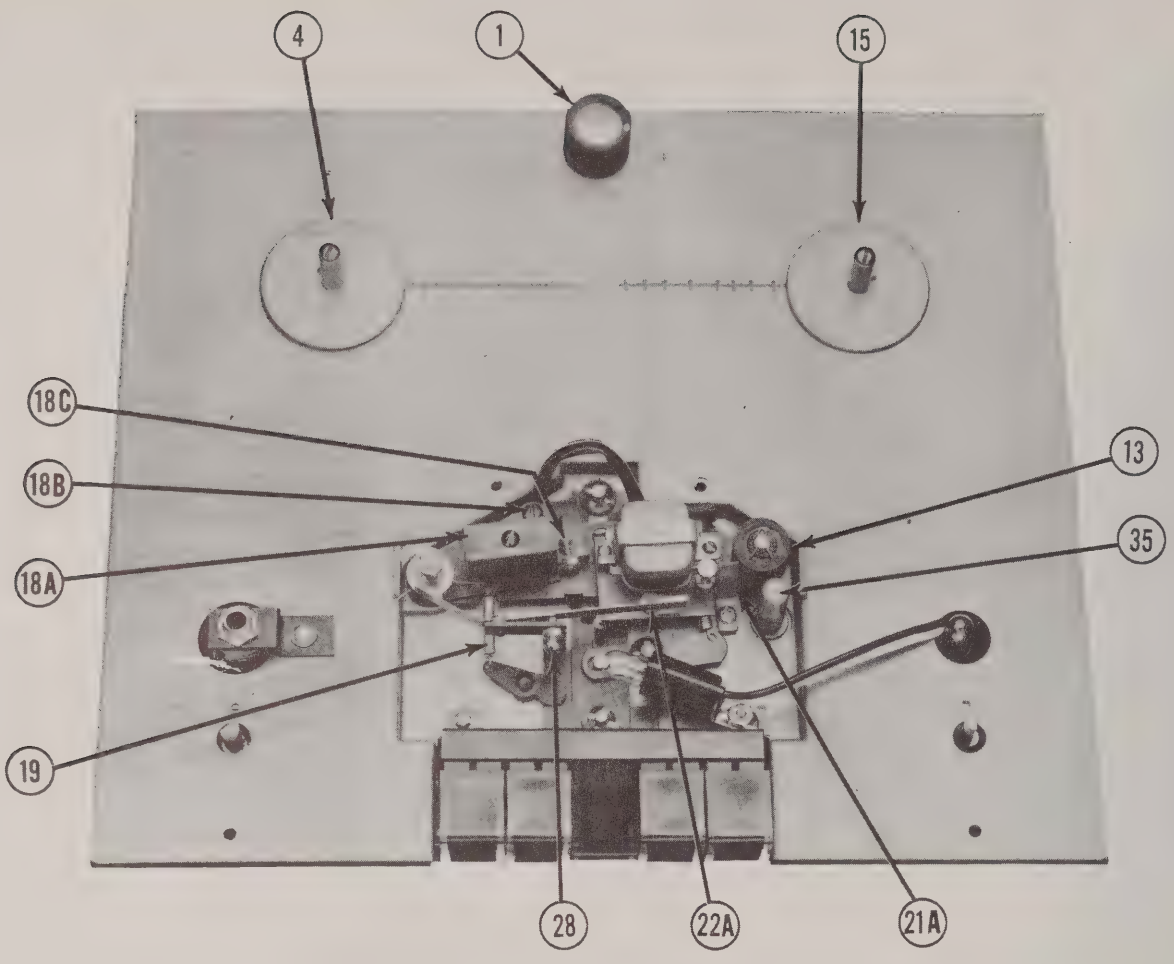

Figure 2

OPERATING INSTRUCTIONS

Threading the Tape -

1. Place a reel of tape on the left-hand spindle and an empty reel on the right-hand spindle making sure the reel slots engage the reel pin on the spindles.

2. Unwind about 14 inches of the tape from the reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making sure the dull coated side of the tape faces the rear of the recorder.

Note: This recorder requires tape with Type "A" winding, i.e. the (dull) coated side faces inward on the reel. In case the (dull) side faces outward Type "B" tape, it can be changed to Type "A" for use on this recorder by winding the tape with a half twist. The two types of tape are identical except the way in which they are wound on the reel.

3. Insert the free end of the tape through the hub of the right-hand take-up reel and place a pencil firmly over the tape, forcing it into one of the three slots on the hub of the empty reel. Turn the reel several turns with the pencil in this position until the tape is secured to the reel and all slack is taken up between the reels.

To Record from Microphone -

1. Turn the On-Off-Volume control knob to the On position and advance about one-half turn.

2. Turn the speed control knob to the desired speed.

Note: Recordings made at a certain speed must be played back at that speed.

3. Insert the Microphone plug into the Microphone jack located directly above the Tone Control.

4. Depress "Record" button down until it latches and with material being recorded, adjust Volume control to the point where a single round spot glows in the Recording Indicator.

Note: Recording level is correct when a single spot glows continuously when recording, and two round spots occasionally on peak passages.

To Record From External Radio -

Recordings can be made from a radio by placing the microphone near the loudspeaker of the radio; however, this type of recording may not be satisfactory as other sounds may be picked up by the microphone which as a result will be recorded on the tape. How-

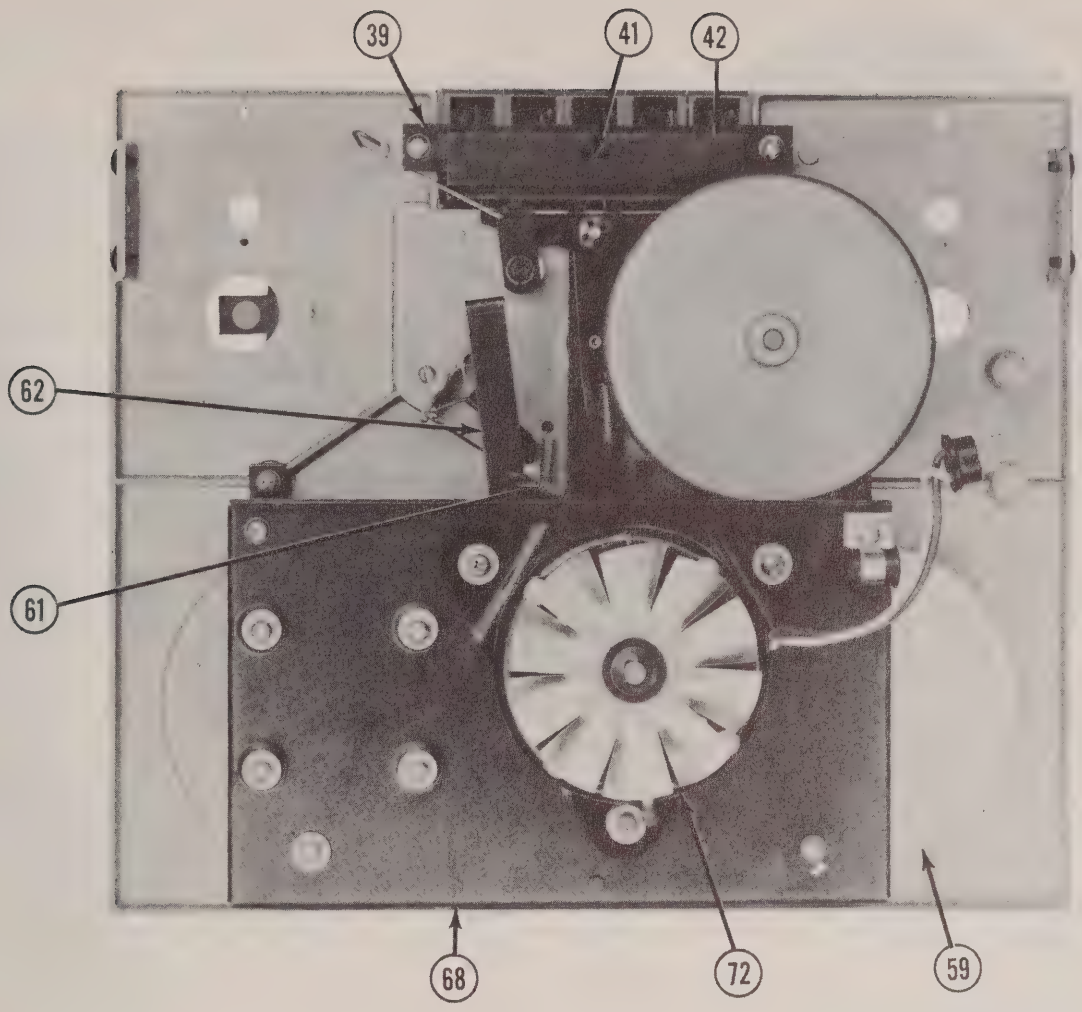

Figure 3

ever, a better quality recording can be made from a radio-phono recording cord (Part No. 2233), complete with plug, resistance network and clips which is connected as follows.

1. Insert the cord plug into the Microphone-Jack.

2. Connect the cord clips across the voice coil terminals on the radio speaker as shown in Figure 4.

3. Proceed as in "To Record From Microphone."

To Record From Phonograph -

1. Insert the radio-phono cord plug (See "To Record From External Radio") into the Microphone Jack.

2. Connect the alligator clips to the crystal leads on the external phonograph.

Note: The black wire on the cord is internally grounded on this unit, therefore, this should always be connected to the ground side of the equipment being recorded.

3. Proceed as in "To Record from Microphone."

Dual Track Recording -

This recorder is designed so that 1/2 the tape width is recorded at a time; therefy resulting in two track recording. This two track operation is accomplished in the following manner.

1. After a reel of tape has been recorded, i.e. all of the tape wound onto the take-up reel, depress the Stop push button. This stops all movement of the tape.

2. Remove the reels from the recorder, turning the full reel over and placing it on the left-hand spindle and the empty reel on the right-hand spindle.

3. Properly thread the tape and proceed with the recording as in "To Record From Microphone."

4. After this track has been recorded the first track of recording is ready to be played without rewinding.

(a) Place the full reel of tape on the feed reel (left-hand) spindle and the empty reel on the take-up (right-hand) spindle.

(b) Thread the tape making sure the dull side of the tape faces the recording head.

(c) Set the controls as described under "To Play a Recording."

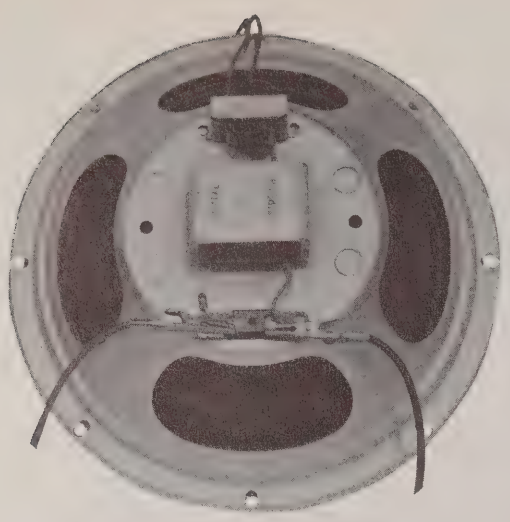

Figure 4

To Play a Recording -

1. Thread the tape as described under "Threading The Tape."

2. Turn the On-Off-Volume control on and allow a few seconds for the tubes to warm up.

3. Press down on the Playback push button until it is latched into position.

4. Adjust the Volume and Tone control to suit.

To Use an External Speaker -

Any size speaker, of the permanent magnet type having a 3 ohm voice coil, may be used by connecting a speaker extension cord across the voice coil of the speaker then inserting the extension plug into the External Speaker jack located on the right-hand side of the cabinet. This automatically cuts out the self-contained speaker.

To Edit and Splice Tape -

In case tape is broken accidentally, or it is desired to edit the recordings, a splice may be made with scotch tape.

To splice the tape, overlap the ends of the tape approximately 1/2 inch making sure the tape is parallel, then cut the tape on an angle. Place the two ends together and apply scotch tape to the reverse, or uncoated side of the tape. The edges of the scotch tape should be trimmed even with the recording tape. It is suggested that colored scotch tape be used to mark the tape to show the desired divisions or passages. Do not use medicated adhesive tape as it is not suited for this purpose.

Fast Forward and Fast Rewind -

High-speed forward or reverse wind can be obtained by pressing the desired button. These are used primarily in locating a desired portion of a recording in a few seconds.

Caution: The "Stop" button should always be depressed before changing functions or speeds. Always depress the "Stop" button when the recorder is not in use.

Erasing Recorded Material -

Erasing of recorded material takes place automatically when new material is recorded; therefore, no special step is necessary to erase recordings before new recordings are made. However, if a portion of a recording or an entire reel of tape is to be completely erased, do so as follows:

1. Properly thread the tape on the machine.

2. Turn the Volume control knob clockwise until a click is heard. This turns the recorder on.

3. Press down on the Record button until it latches into position. The erasing of recorder material is now in process and may be stopped at any time by depressing the "Stop" button.

Note: Only one track of recorded material is erased at a time. To erase the second track, reverse the reels and repeat the above operation.

To Use Recorder As A Public Address System -

The recorder may be used for public address with or without recording the material at the same time. Plug in an external speaker as described in To Use On External Speaker. Turn the recorder on and depress the Record button but do not use tape. Be careful to maintain sufficient distance between the microphone and the external speaker to prevent feedback howl. If it is desired to record the speech or address at the same time, thread the tape as previously described before depressing the Record button.

ADJUSTMENT

Disassembly Instructions -

1. Remove 2 Phillips head screws from rear of case.

2. Remove push-on type volume and tone control knobs.

3. Remove 2 screws located under volume and tone control knobs. Remove escutcheon.

4. Remove 2 Phillips head screws located under escutcheon.

5. Lift unit out of case, removing leads from speaker before removing unit completely.

Record-Play Head Adjustment - (See Figure 6)

To adjust the record-play head (22) for maximum response, make the following adjustment:

1. Remove the rear cover escutcheon (2).

2. Properly thread a good recorded tape on the machine.

3. Set the controls as described under "To Play a Recording."

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L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

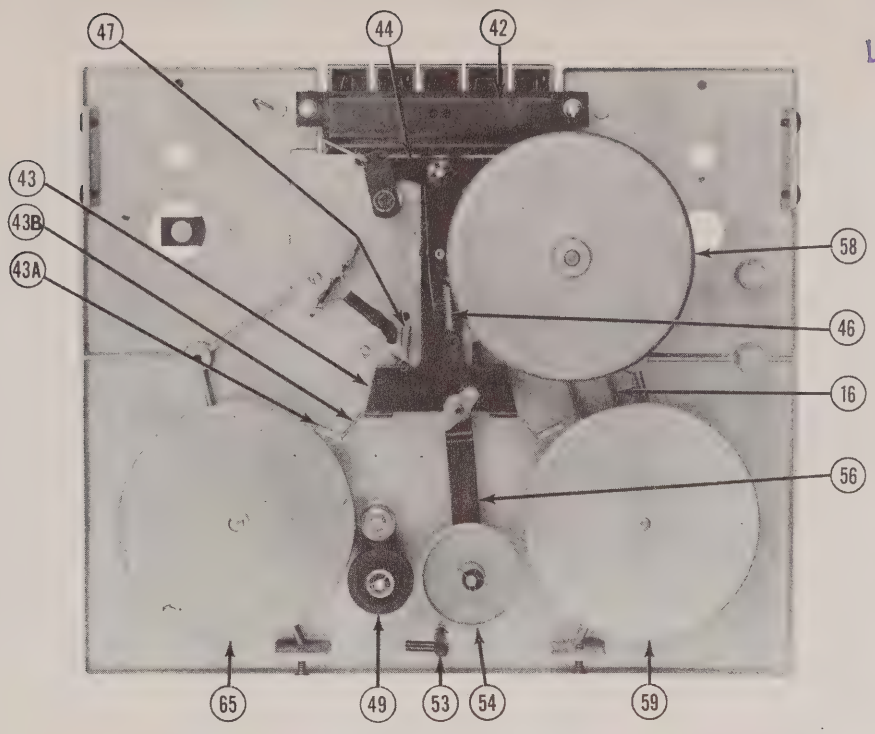


Figure 5

(a) For record-play head (22) mounted U-clamp: Loosen the bracket mounting screw (22A) see Figure 2, and move the head against the tape until maximum response is obtained. Hold the head in place and tighten the mounting screw.

(b) For side-mounted record-play head: Loosen the two bracket mounting screws and move the head against the tape for maximum response. Hold the head in position and tighten the screws.

4. Replace the rear cover escutcheon (2).

Pressure Pad Adjustment - (See Figure 6)

1. Remove the front and rear escutcheons (2 and 31).

2. Depress the "Play" button. Do not turn the recorder on.

3. Use a pencil type postal scale and check the amount of pressure necessary to just pull the pad away from the tape. The test should be made on the end of the pressure pad mounting spring (26). Adjust the pressure pad for 1-3/4 oz. ±1/4 oz. pressure.

(a) The record-head pressure pad is adjusted by the locked adjustment screw (28).

(b) The guide post pressure pad (29) is adjusted by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.

4. After the adjustments are made depress the "Stop" button and replace the trim covers.

Erase Head Adjustment -

1. With tape properly threaded, turn recorder on and depress the Record button. Allow tape to run for a few seconds then turn recorder off, but leave Record button depressed.

2. With the trim covers removed check the erase head (18A), see Figure 2, to see if it is parallel with the tape, if not loosen screw (18B) just enough so the head can be pivoted and align it with the tape then tighten the screw.

Caution: Make sure the head retracting spring (9), see Figure 6, remains in front of the erase head while adjusting it.

3. Check to see if the top edge of the tape coincides with the top end of the diagonal slot in the erase head (junction of long diagonal slot and short vertical slot). To adjust level of tape, loosen lock nut (5), see Figure 6, and rotate tape guide post (6) to move tape up or down. Tighten lock nut (5).

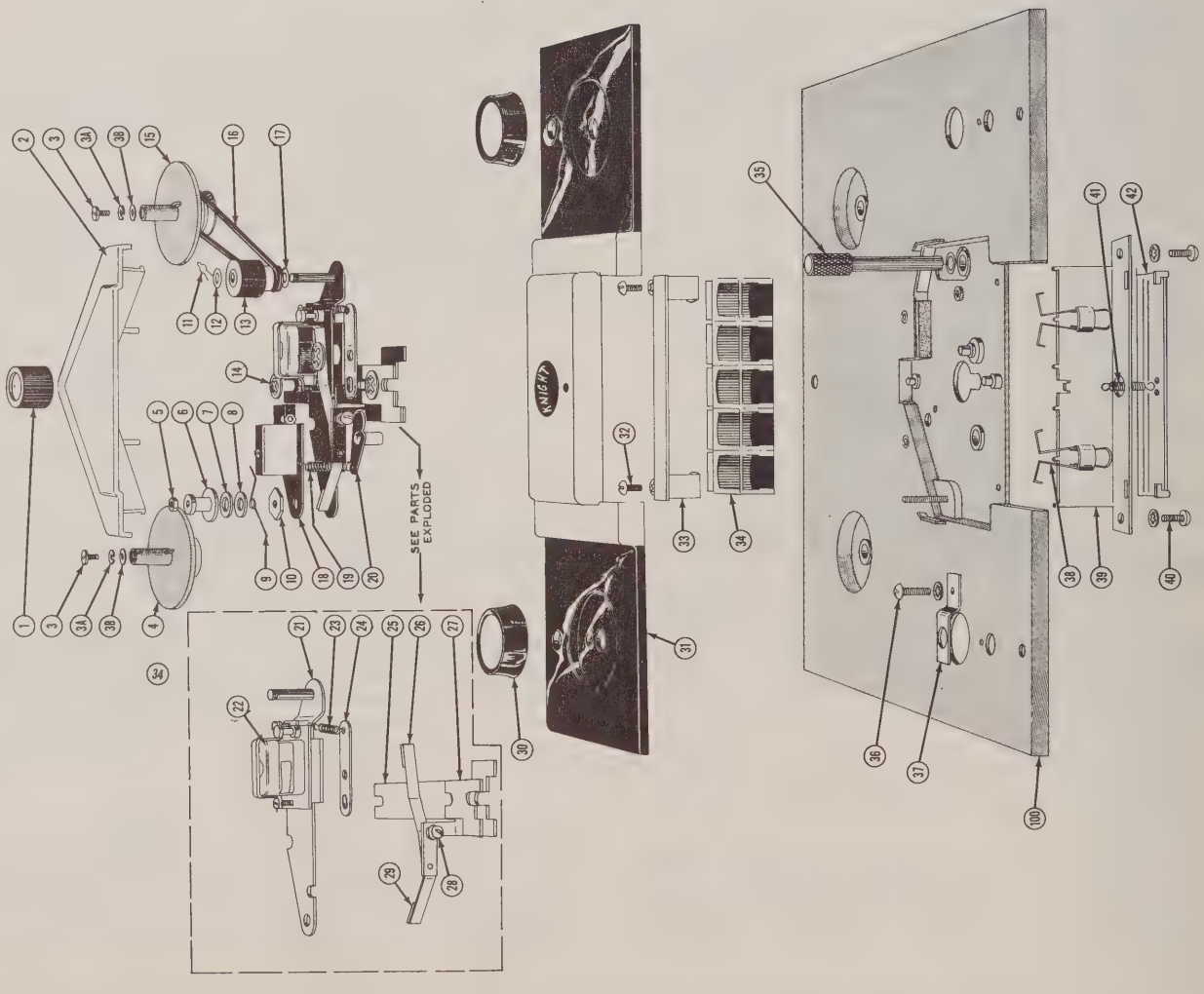
4. After this adjustment has been made, check to see if the tape moves forward approximately 1/64 inch when the "Record" button is depressed, if not, loosen the forward adjustment screw (18C) and turn the screw in or out as required to obtain this 1/64 inch adjustment. Tighten the lock nut.

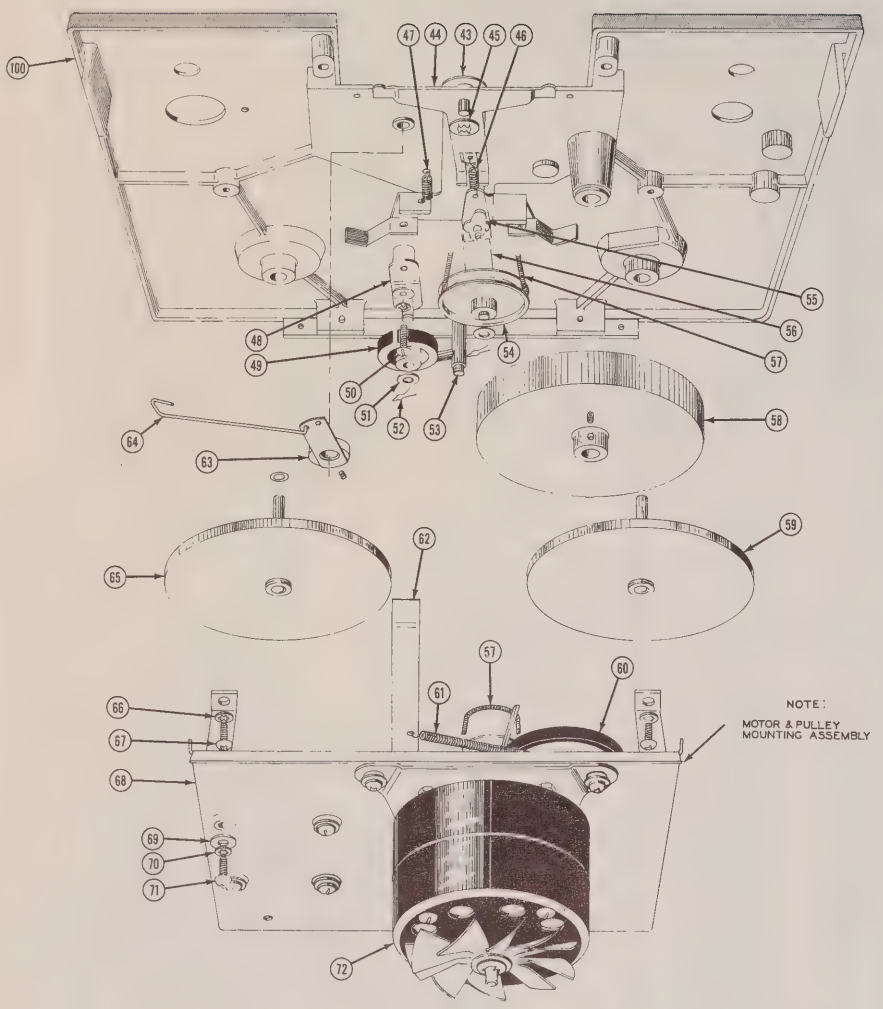
5. Replace the trim covers.

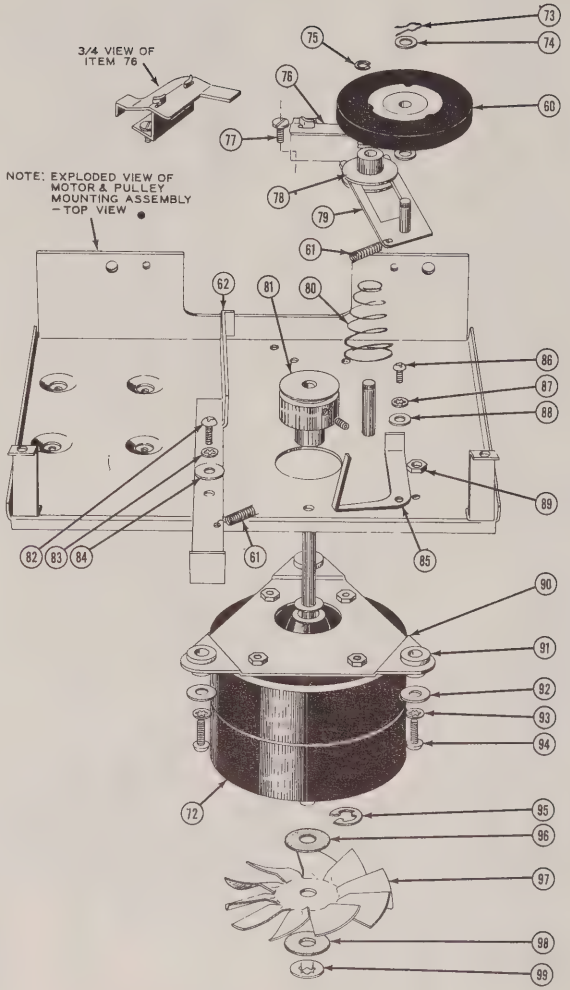
Brake Shoe Adjustment - (See Figure 5)

1. In order to adjust the brake shoes, the complete mechanism must be removed from the carrying case and the speaker disconnected.

2. With all push buttons in the up position the brake shoes (43A) should clear the drums by a minimum of 1/16 inch.


SEE PARTS EXPLODED
KNIGHT





A PHOTOFACT "EXPLODED" VIEW
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Figure 6.

3. The adjustment is accomplished by bending the spring arm (43B).

Tape Sound (Monkey Chatter) During Fast Forward or Fast Rewind -

If during fast forward or fast rewind there is tape sound (Monkey Chatter) bend bracket (21A) forward so that the tape clears the recording head by approximately 1/32 inch with the Fast Forward or Rewind button depressed. See Figure 2.

Adjustment for Slow Take-Up Reel -

There are some instances where the spring drive belt (16), see Figure 5, stretches after a period of time. In this case, the drive belt (16) should be removed and shortened.

1. Clip off 3 to 5 turns of the spring belt.

Note: The spring belt is made so that one end will twist onto the tip of the other end. Therefore, clip the turns off the large end of the spring.

2. Twist the ends together and replace the belt.

Bias Adjustment -

Turn the recorder on and depress the Record button, use no tape.

To determine if the bias is within satisfactory limits without dismantling the unit, merely connect a VTVM from the recording head to the chassis. If 75 to 100 volts are present no adjustment is necessary.

If the reading is outside of this range proceed as follows:

1. Try a new 5879 or 6SJ7, 6AQ5 and 6X4.

2. If still not within range remove the chassis shield and connect a low capacity VTVM from pin #1 of the 6AQ5 to the chassis and adjust trimmer M4 (see Figure 8) to obtain a reading of 2.25 volts. This provides the optimum in performance.

TROUBLES

Push Buttons Fail to Latch into Position -

1. Lock plate spring (41) loose or missing resulting in the lock plate not held against the hinge bracket (39). See Figure 3.

Fails to Erase -

1. Spring (19) loose or broken resulting in the erase head (18A) not being pulled forward to engage the tape. See Figure 2.

2. Erase head not aligned properly. See "Erase Head Adjustment."

No Fast Forward or Reverse - (See Figure 5)

1. Idler lever tension spring (46) may be loose or broken, if so, the idler lever (56) will not be actuated. Replace spring (46).

2. Check the idler drive belt (57), see Figure 6 to see if it is properly connected.

No Drive on Record or Playback - (See Figure 6)

1. Idler tension spring (61) loose or broken thereby not holding the idler wheel (60) engaged with the motor pulley (81) and the flywheel (58).

2. Idler slide plate (79) binding on the slide bushing (78) thus preventing the idler from moving forward.

Tape Fails to Wind on Reel During Record or Playback -

1. Reel drive spring (16) broken. See Figure 5.

Speed Variation or "Wow" - (See Figure 6)

1. Check the capstan (35), pinch roller 13, idler (60), motor pulley (81) and flywheel (58) for oil or foreign material. Clean these parts with a good cleaning fluid.

2. Check the motor pulley (81) to see if it is secured to the motor shaft.

3. Check the idler tension spring (61) to see if it is holding the idler engaged with motor pulley and flywheel.

4. Idler slide plate (79) binding on the slide bushing (78) which may prevent the idler from making positive contact with motor pulley and flywheel.

Tape Reel Pan Loose - (See Figure 6)

1. Screw (3) holding either reel pan (4 or 15) is loose. Install a fibre washer between lockwasher and reel pan to prevent loosening. Remove unit from case and hold brake drum (59 or 65) while tightening screw.

Tape Overruns or Spills when Stop Button is Depressed During Fast Forward or Rewind-

1. Brake shoes out of adjustment. See "Brake Shoe Adjustment."

2. Brake pads may be worn out.

Failure to Record -

1. Tape pressure pad not adjusted properly resulting in the tape not being held against the recording head. See "Pressure Pad Adjustment."

2. Record head loose on its mounting. Adjust head and tighten into position as described under "Record-Play Head Adjustment."

3. Check the recording tape to see if the dull coated side faces inward on the reel. If the dull side faces outward, a recording cannot be made. If this condition exists wind the tape onto an empty reel in a half twist so the tape can be used on the recorder.

4. Laminations on the recording head dirty.

Note: The recording head and erase head are subject to an accumulation of tape coating residue, which is worn off as the tape passes. This must be periodically removed since it will cause distortion. This accumulation may be removed with carbon tetrachloride and a small cotton swab on the end of a toothpick. Be careful not to mar the lamination as they should be smooth to operate properly.

Howl in Playback -

1. Loud howl in playback when volume control set for high volume usually due to microphonic 6SJ7 or 5879 whichever is used.

2. When replacing 6SJ7 for howl or other defect, try several 6SJ7 tubes to pick one with lowest microphonism. 5879 tubes are low microphonic tubes and need not be picked.

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1946 ...
TENNYSON, COLORADO

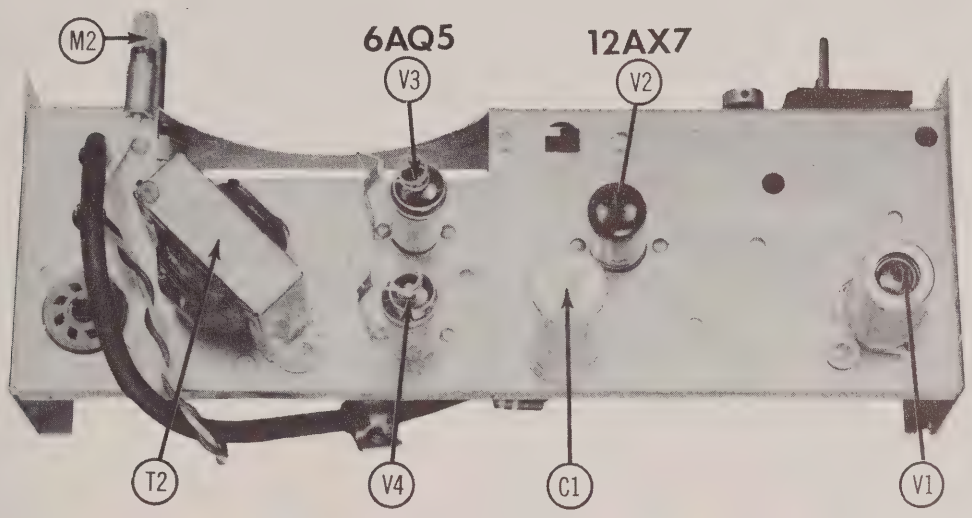


Figure 7

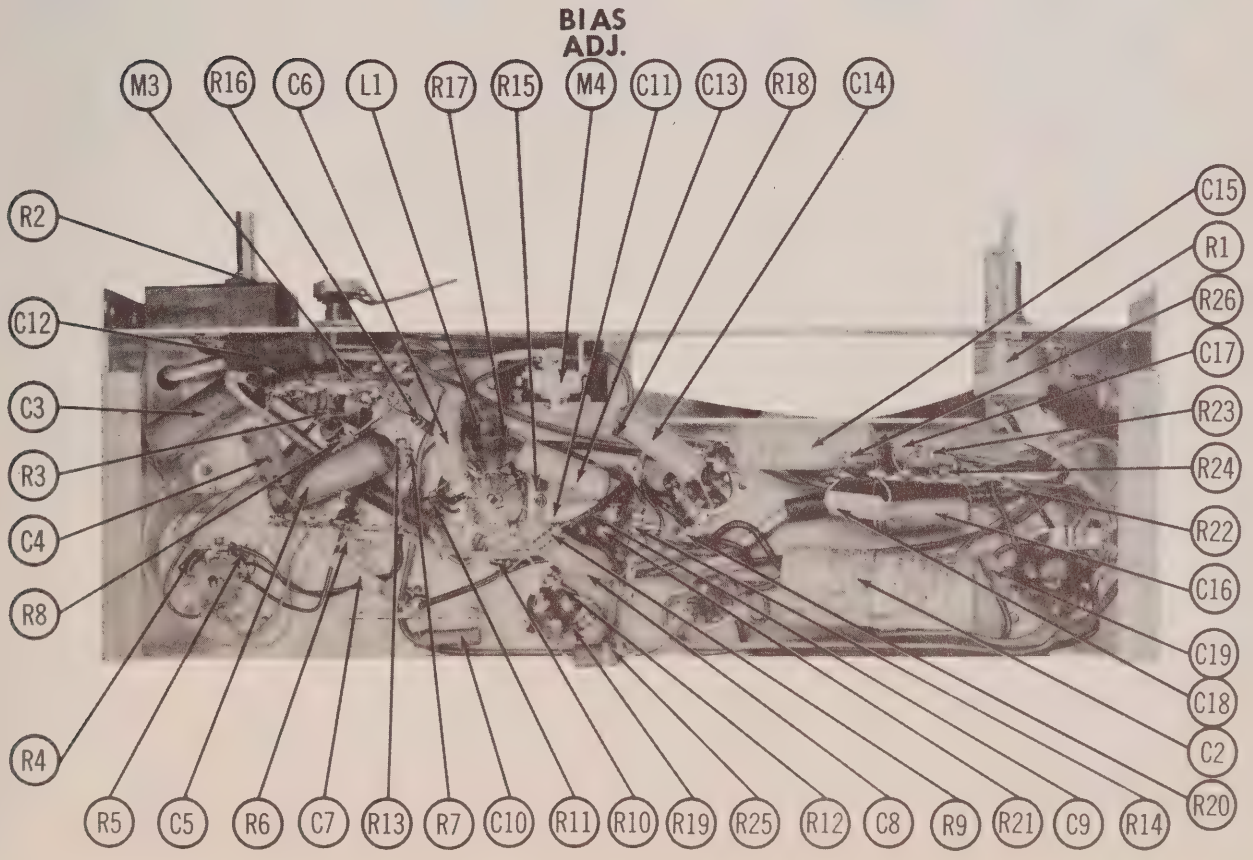
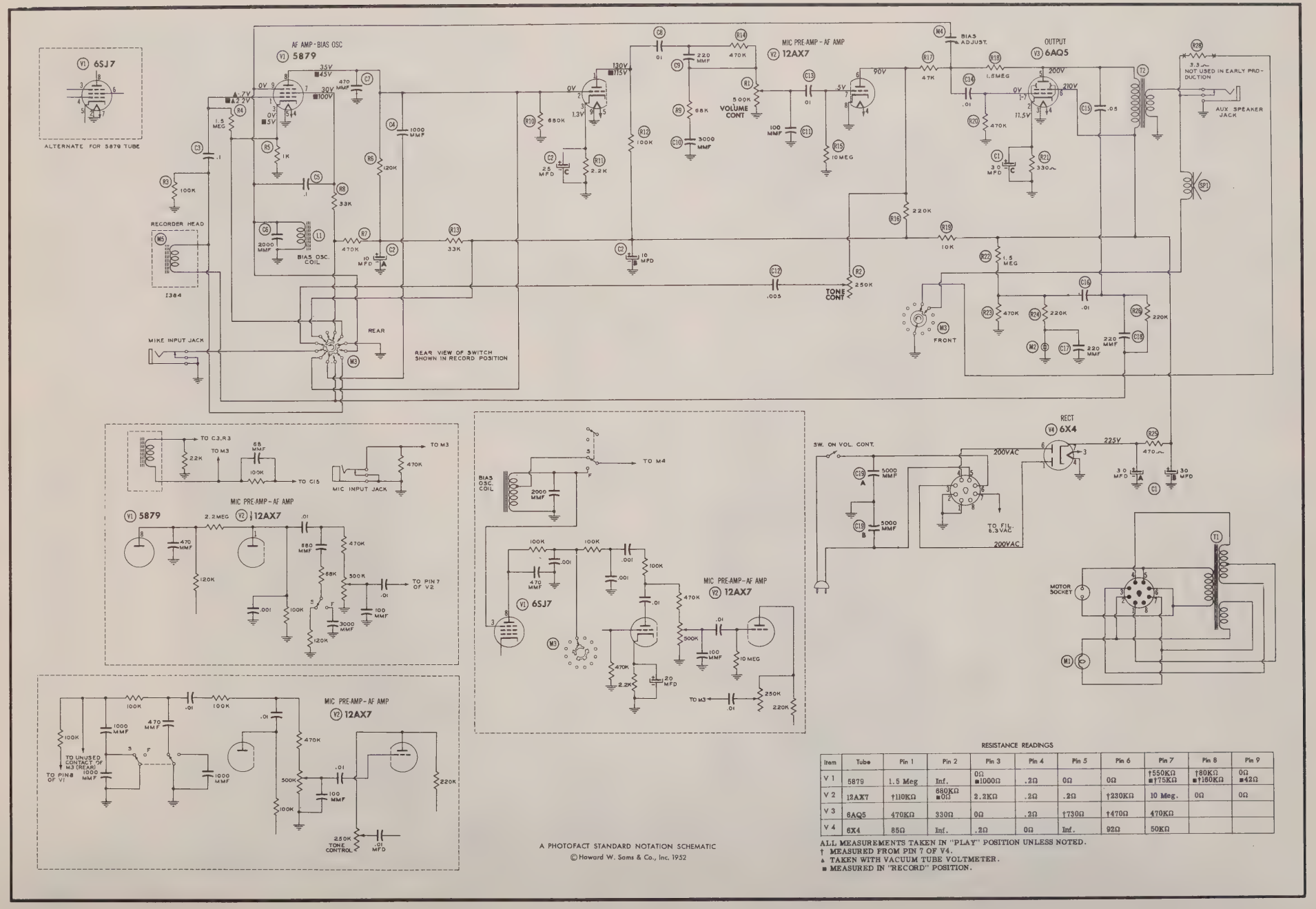


Figure 8.



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	1.5 Meg	Inf.	0Ω ■1000Ω	.2Ω	0Ω	0Ω	†550KΩ ■†75KΩ	†80KΩ ■†160KΩ	0Ω ■42Ω
V 2	12AX7	†110KΩ	680KΩ ■0Ω	2.2KΩ	.2Ω	.2Ω	†230KΩ	10 Meg.	0Ω	0Ω
V 3	6AQ5	470KΩ	330Ω	0Ω	.2Ω	†730Ω	†470Ω	470KΩ		
V 4	6X4	85Ω	Inf.	.2Ω	0Ω	Inf.	92Ω	50KΩ		

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS NOTED.
† MEASURED FROM PIN 7 OF V4.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.
■ MEASURED IN "RECORD" POSITION.

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Figure 9. Circuit Schematic Diagram. (Inserts Show Alternate Circuits.)

Knight Mechanical Parts List

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Ref. No.	Part No.	Description
1	40-2152	Speed Shift Knob
2	28-2070	Rear Cover Escutcheon
3		Screw 6-32 X 3/16 BHMS
4	111-32-1	Reel pan for feed reel
5		Nut, Hex 6-32 CP
6	148-5-1	Tape Guide Post
7	28.151	Felt Washer
8		Flat Washer 1/2 X 3/16 X 1/32
9	97-3065	Erase Head Retracting Spring
10	63-2183	Tape Guide Post Spacer
11	16-2005	Pinch Roller Retaining Spring (Hairpin clip)
12	28.151	Thrust Washer
13	70-2026	Pinch Roller
14		Speed Nut 3/8-32 Palnut
15	111-33-1	Reel Pan for Take Up Reel
16	97-3071	Reel Drive Spring
17		Flat Washer 1/2 X 3/16 X 1/32
18	51-3179-1	Erase Head Plate
19	97-3068	Spring
20	110-41-1	Record Actuating Lever
21	51-3180-1	Pinch Roller Plate
22	See M5	Tape Recording Head
23	97-3066	Pinch Roller Tension Spring
24	110-40-1	Playback Actuating Lever
25	51-3166-1	Playback Slide Plate
26	97-3064	Pressure Pad Spring
27	51-3167-1	Record Slide Plate
28		Screw (Spring Adjusting) 6-32 X 3/8 RHMS
29	101-206	Felt Pad
30	40-2149-1	Knob
31	28-2071-1 Maroon, 2 Blue	Escutcheon (Specify color)
32		Screw 6-32 X 7/16 RHMS
33	5-3238	Pushbutton Retaining Bracket
34	40-2150-1 Maroon, 2 Blue, 3 Green	Push Buttons (Specify Color)
35	58-3050	Capstan Shaft
36		Screw (For Input Jack) 6-32 X 1/4 Philips HDMS
37	5-3247-1	Input Jack Bracket
38	97-3067	Push Button Return Spring
39	5-3239-1	Hinge Bracket for Push Buttons
40		Screw 6-32 X 1/4 Philips HDMS
41	97-2029	Lock Plate Spring
42	51-3170-1	Locking Plate for Push Buttons
43	51-3168-1	Brake Slide Plate
44	51-3164-1	Shift Plate for High Speed
45	48-2175-3	Speed Nut (Presthole)
46	97-3068	Idler Lever Tension Spring
47	97-3070	Brake Return Spring
48	51-320-1	Sub-Idler
49	79-2027	Sub-Idler
50		Screw
51		Thrust Washer
52	16-2005	Spring (Hairpin Clip)
53	58-3043	Speed Control Shaft
54	79-2029	Idler Drive Sheave
55		Lock Nut (Palnut) 3/8 - 32
56	110-52-1	Idler Lever
57	27-2068	Idler Drive Belt
58	79-2028	Drive Wheel
59	27-2072	Brake Drum
60	79-2010	2 1/2" Rubber Bonded Idler
61	97-3072	Idler Spring
62	110-46	Equalizer Switch Lever
63	110-48-B	Switch Lever Assembly
64	2-3104	Switch Arm Link
65	27-2073	Brake Drum
66		Lockwasher #6
67		Screw 6-32 X 1/4 Phillips HDMS
68	51-3173-1	Motor and Transformer Mounting Plate
69		Flat Washer 3/8 X 3/16 X 1/32
70	73-2231-6	Lockwasher
71		Screw 6-32 X 5/16 Phillips HDMS
72	47-2099	Motor
73	16-2005	Retaining Spring (Hairpin Clip)
74	28.151	Washer (Flat)
75	73-2302-1	C Washer
76	110-45	Speed Shift Lever
77		Screw 6-32 X 1/4 BHMS
78	6-3067-1	Idler Slide Bushing
79	51-3124	Idler Slide Plate Assembly
80	97-3069	Spring, Idler Lift Compression
81	27-2066	Motor Pulley
82		Screw 8-32 X 3/8
83		Lockwasher (Internal) #8
84		Washer (Flat) #8
85	110-47	Idler Throw-out Lever
86		Screw 8-32 X 1/4 Phillips HDMS
87		Lockwasher Internal #8
88		Washer (Flat) 1/2 X 3/16 X 1/32
89		Nut 8-32
90	51-3174-1	Motor Adapter Plate
91	35-2018	Mounting Grommet
92		Washer (Flat) 1/2 X 3/16 X 1/32
93		Lockwasher Internal #8
94		Screw (Sems) 8-32 X 5/8
95	73-2302-1	C Washer
96	73-2051	Linen Washer
97	34-2042	Fan
98	73-2051	Linen Washer
99		Speed Nut (Palnut) 3/8 - 32

Knight Electrical Parts List

Item No.	Part No.	Use and Description
V1A	69-2222	AF Amp. Bias Osc., 5879
V1B		AF Amp. Bias Osc., 6SJ7
V2	69-2175	Mike Preamp., AF Amp. 12AX7
V3	69-2171	Audio Output, 6AQ5
V4	69-2172	Rectifier, 6X4
C1A	18-2079	Filter, 30 mfd. @ 250 V
C1B		Filter, 30 mfd. @ 250 V
C1C		Audio Output Cath., 30 mfd. @ 25 V
C2A	18-2080	Decoupling (Red), 10 mfd. @ 200 V
C2B		Decoupling (Blue), 10 mfd. @ 200 V
C2C		Mic Preamp. Cath. (Yellow), 25 mfd. @ 25 V
C3	75-2005	Audio Coupling, .1mfd. @ 200 V
C4	76-2207	Audio Coupling, 1000 mmf. @ 500 V
C5	75-2005	Osc. Coupling, .1 mfd. @ 200 V
C6	76-2255	Fixed Trimmer, 2000 mmf. @ 500 V
C7	76-2208	AF Amp. Plate, 470 mmf. @ 500 V
C8	75-2063	Audio Coupling, .01 mfd. @ 400 V
C9	76-2286	Tone Comp., 220 mmf. @ 500 V
C10	76-2287	Tone Comp., 3000 mmf. @ 500 V
C11		Tone Comp., 100 mmf. @ 500 V
C12	75-2088	Tone Comp., .005 mfd. @ 600 V
C13	75-2063	Audio Coupling, .01 mfd. @ 400 V
C14	75-2063	Audio Coupling, .01 mfd. @ 400 V
C15	75-2062	Audio Coupling, .05 mfd. @ 400 V
C16	75-2063	Indicator Coupling, .01 mfd. @ 400 V
C17	76-2209	Indicator Filter, 220 mmf. @ 500 V
C18	76-2209	Tone Comp., 220 mmf. @ 500 V
C19A		Line Filter, 5000 mmf., See Note 1
C19B		Line Filter, 5000 mmf. @ 400 V

Note 1. Some sets may use two .01 mfd. Capacitors in this application.

R1	19-2194-5	Volume Control, 500K Ohm @ 1/2 W
R2	19-2190-4	Tone Control, 250K Ohm @ 1/2 W
R3	53-2053	Isolation, 100K Ohm @ 1/2 W, See Note 5.
R4	53-2043	AF Amp. -Bias Osc. Grid, 1.5 Meg 1/2 W
R5	53-2271	AF Amp. -Bias Osc. Cath., 1K Ohm 1/2 W
R6	53-2738	AF Amp. -Bias Osc. Plate, 120K Ohm 1/2 W
R7	53-2596	Voltage Divider, 470K Ohm, 1/2 W
R8	53-2641	AF Amp. Screen, 33K Ohm, 1/2 W
R9	53-2513	Tone Compensation, 68K Ohm, 1/2 W
R10	53-2598	Mic. Preamp. Grid, 680K Ohm, 1/2 W
R11	53-2620	Mic. Preamp. Cath., 2.2K Ohm, 1/2 W
R12	53-2053	Mic. Preamp. Plate, 100K Ohm, 1/2 W
R13	53-2641	Decoupling, 33K Ohm
R14	53-2596	Tone Compensation, 470K Ohm, 1/2 W
R15	53-2546	AF Amp. Grid, 10 Meg. 1/2 W
R16	53-2551	AF Amp. Plate, 220K Ohm, 1/2 W
R17	53-2609	Feedback Network, 47K Ohm, 1/2 W, See Note 6.
R18	53-2043	Feedback Network, 1.5 Meg. 1/2 W
R19	53-2047	Decoupling, 10K Ohm 1/2 W
R20	53-2596	Output Grid, 470K Ohm 1/2 W
R21	53-2561	Output Cath., 330 Ohm 1 W
R22	53-2043	Indicator Network, 1.5 Meg. 1/2 W
R23	53-2596	Indicator Network, 470K Ohm, 1/2 W, See Note 2.
R24	53-2551	Indicator Network, 220K Ohm, 1/2 W
R25	53-2661	Filter, 470 Ohm, 2 W, See Note 3.
R26	53-2551	Indicator Network, 220K Ohm, 1/2 W
R27		Filter, 1000 Ohm, 1 W, See Note 4.
R28	53-2763	Voice Coil Shunt, 3.3 Ohm, 1 W

Note 2. Value adjusted in production for proper recording indicator level.

Note 3. Some Models use a 1000 ohm resistor in this application.

Note 4. Not used in all models.

T1	80-2198	Power Transformer
T2	81-2110-2	Output Transformer
SP1	64-2108	3.2 Ohm, PM Speaker
L1	17-3137-A	Bias Osc. Coil
M1		Dial Light, 6-8 V, .15 Amp. Type #47
M2	45-2036	Neon Bulb Type NE51, Recording Level Indicator
M3	66-3046	Play Record Switch
M4	78-2065	Trimmer, Bias Adj., (3-35 mmf.)
M5		Record Head, See Note 5.
	8-2379-A	Cabinet
	40-2153-1	Knob (Plain)
	40-2153-2	Knob (With Dot)
	108-28-1	Microphone

Note 5: (a) Shure Model TR6 Record Head used in early models, Part No. 55-2081.

(b) Shure Model 1384 and TR-16A Record Head used in some models Part No.55-2079.

PHOTOFACT* Folder

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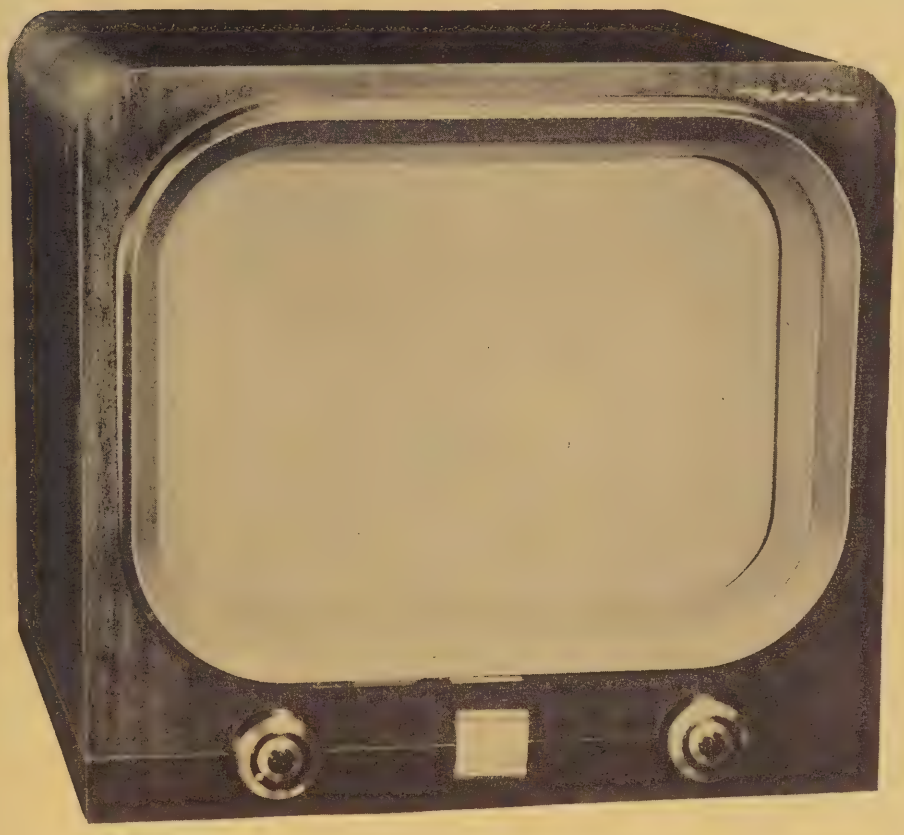

MODEL 20T3

MOTOROLA MODELS 20K6, 20K6B, 20T2A, 20T2AB, 20T3, 20T3B (Ch. TS-307)

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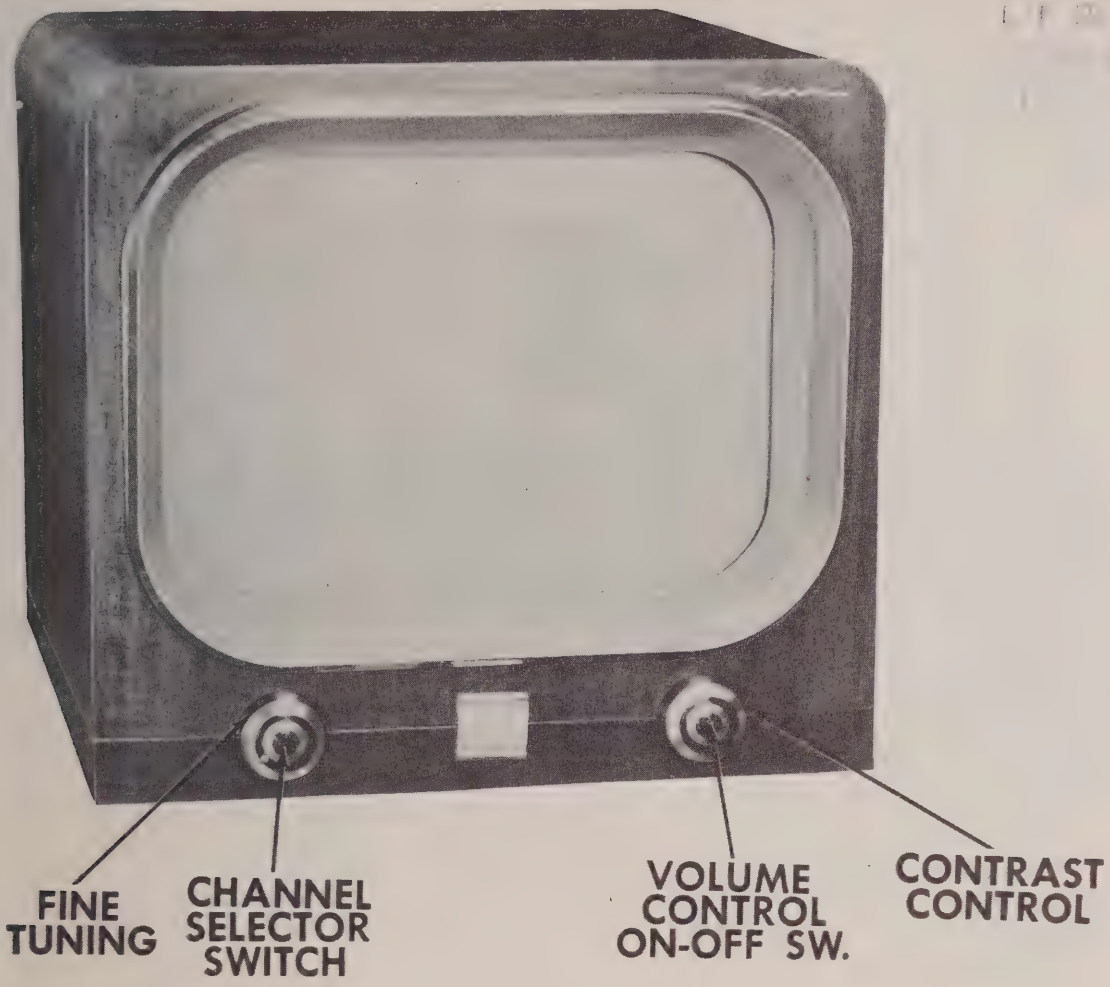

MOTOROLA 20T3

TRADE NAME	Motorola Models 20K6, 20K6B, 20T2A, 20T2BA, 20T3, 20T3B (Ch. TS-307)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 volts AC-60 Cycle
RATING	1.48 amp. @ 117 volts AC
TUNING RANGE-	Channels 2 thru 13

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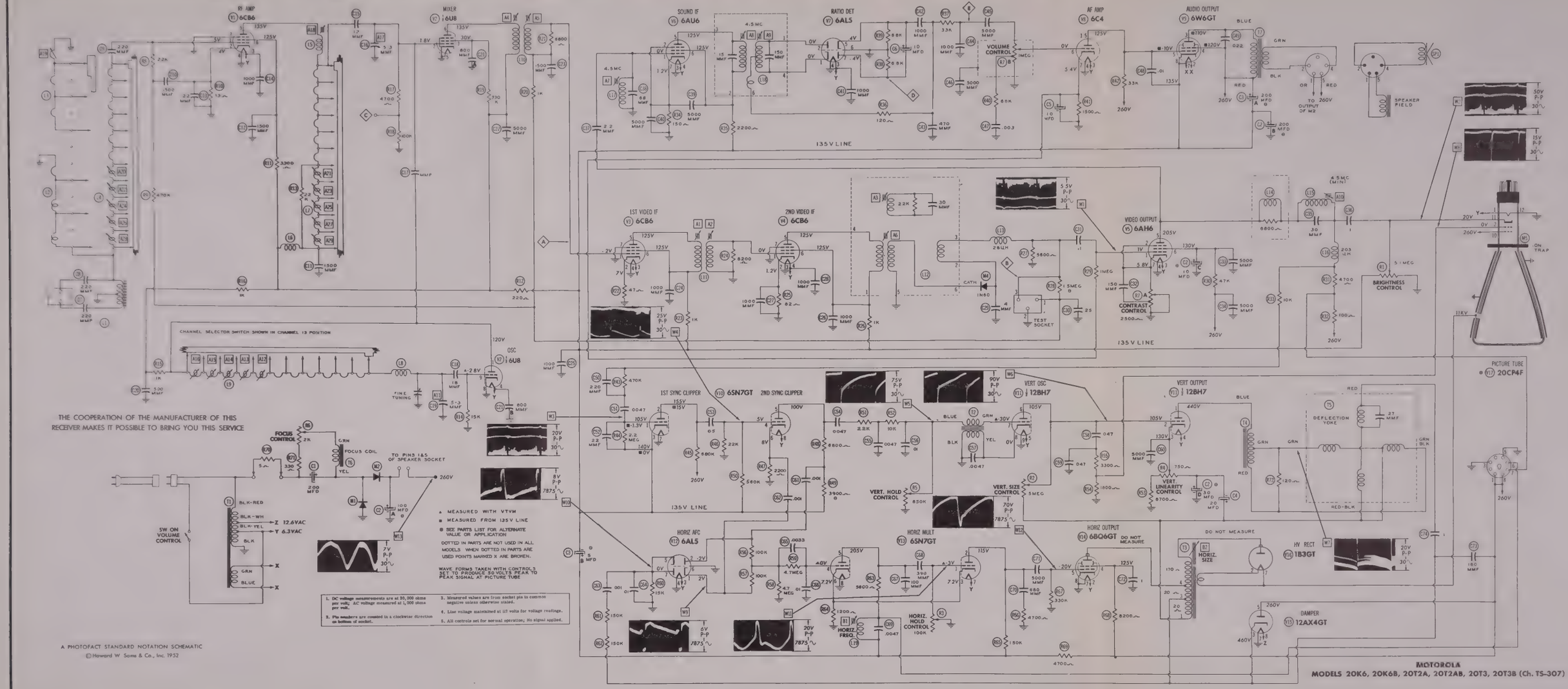

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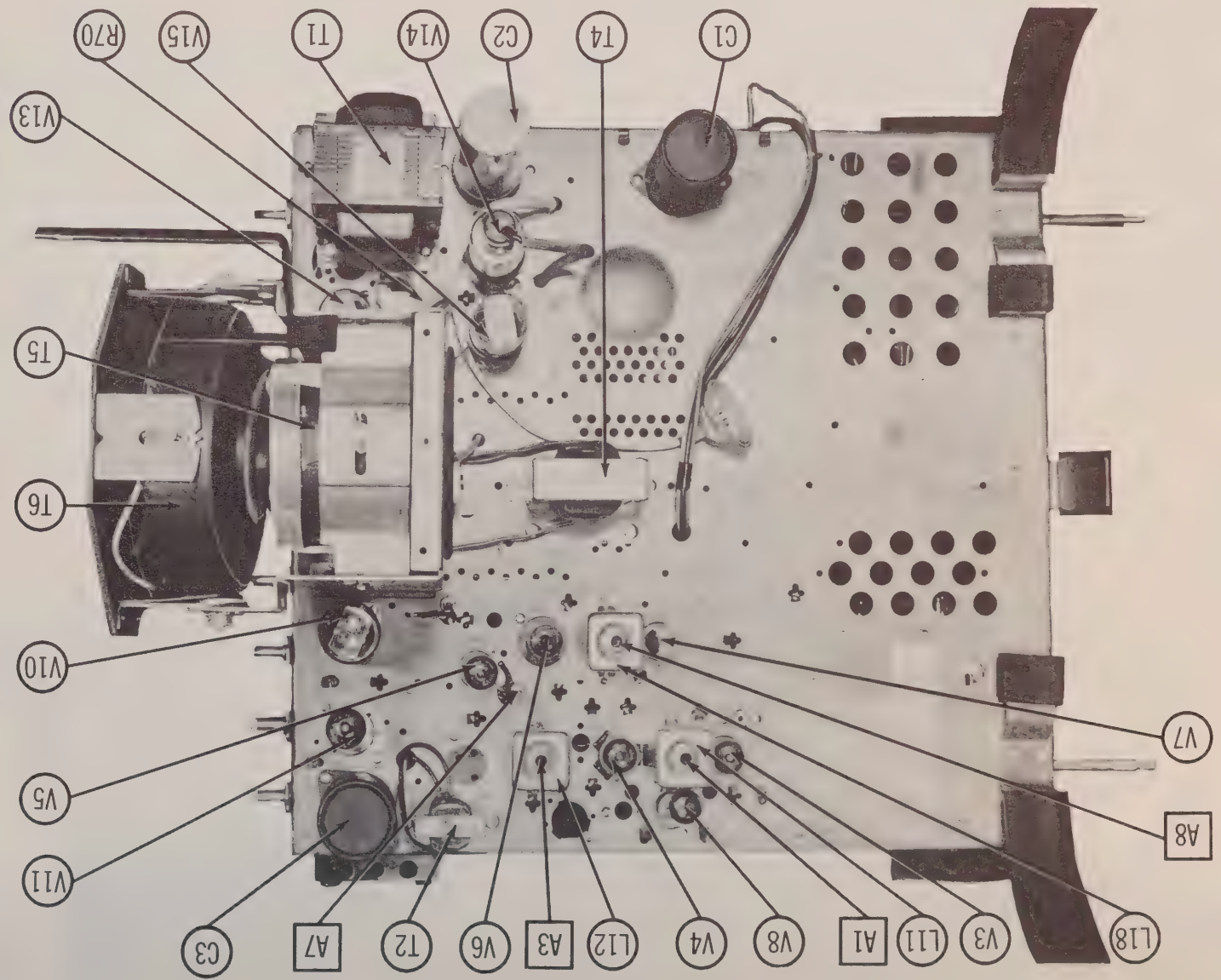
CHASSIS TOP VIEW



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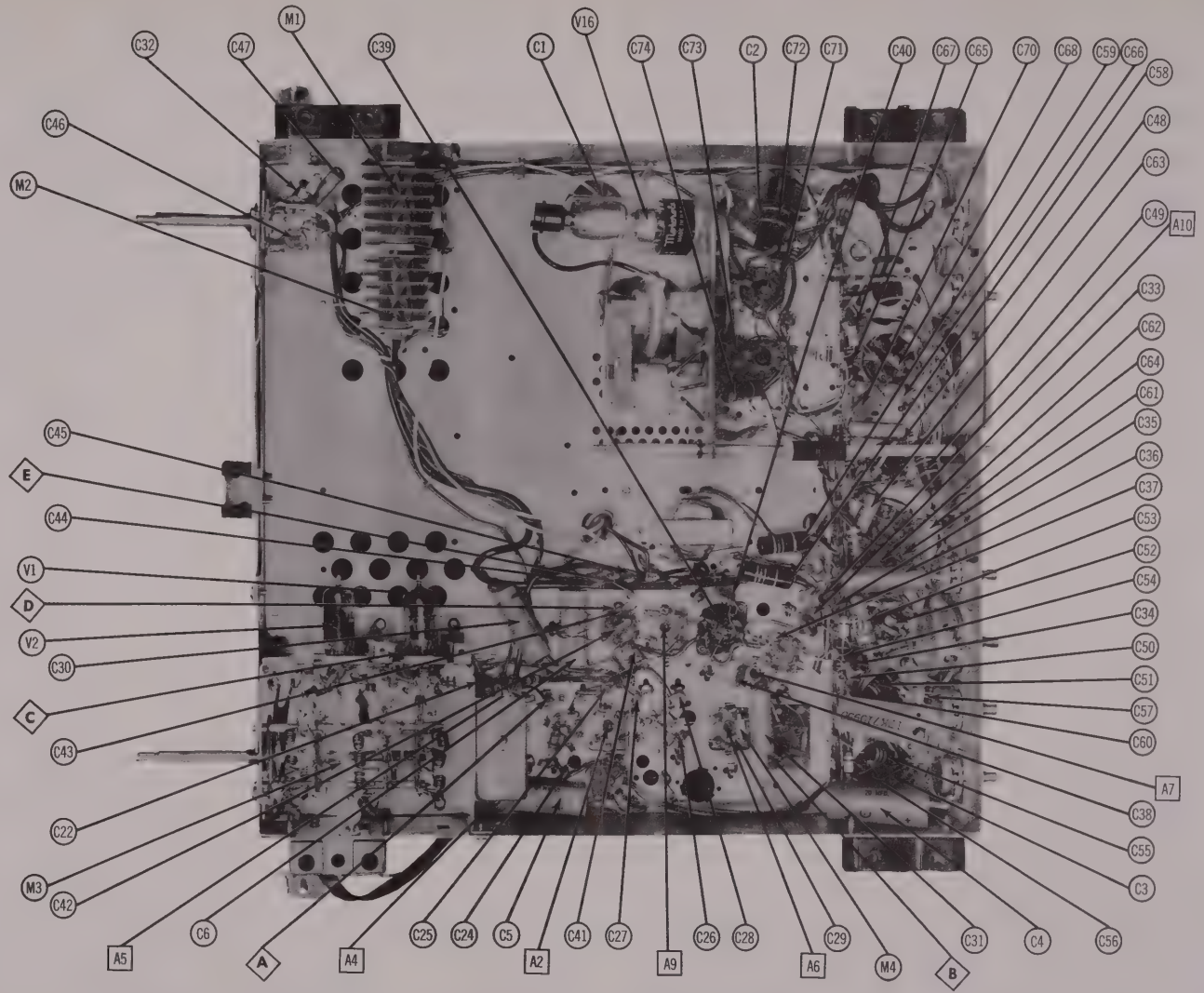

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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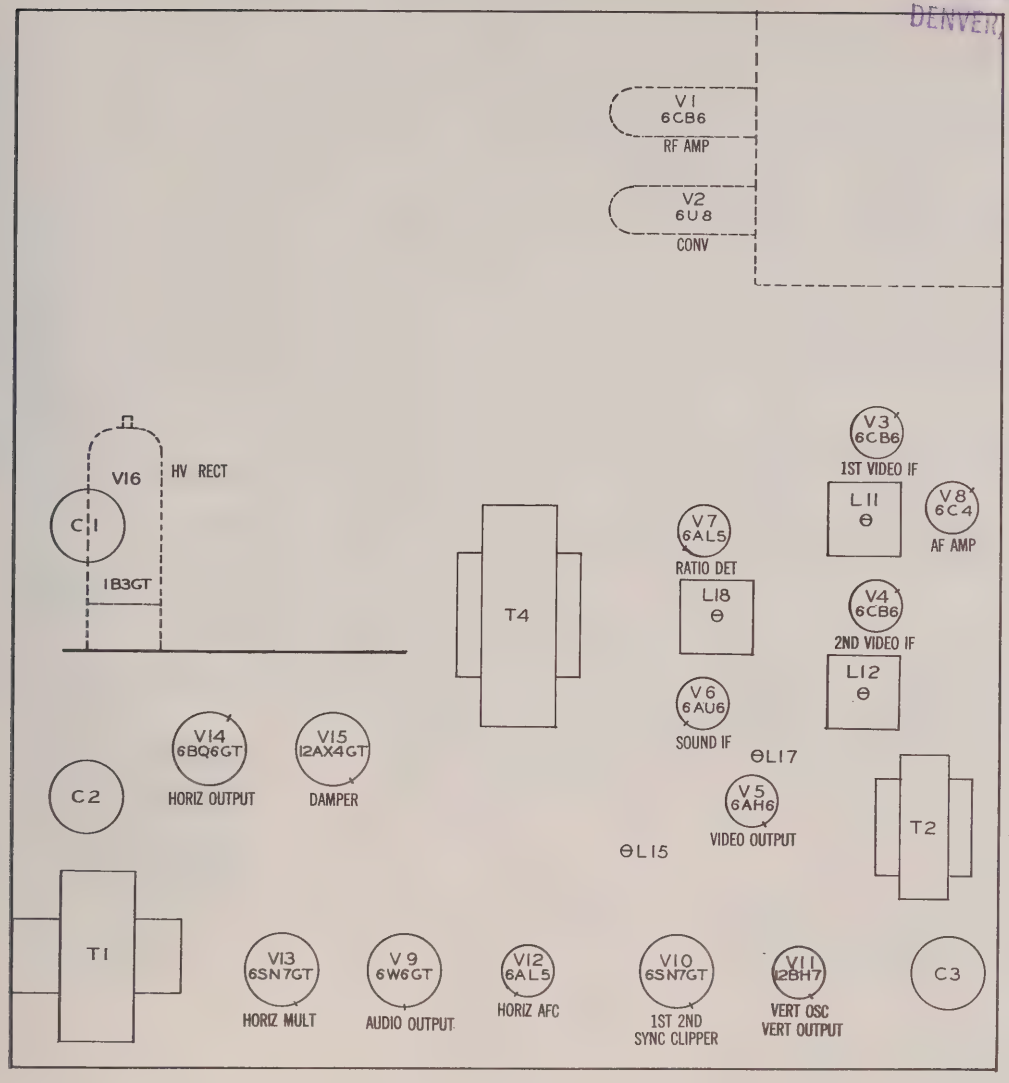
TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, No sound - Selenium Rectifiers (M1, M2)

LOSS OF PICTURE OR SOUND
No pic, No sound, Has raster - V2, V3, V4, V5
No pic, No sound, Has snow- V1, V2, V3
No pic, Has sound, has raster - V5, V17
Has pic, No sound - V6, V7, V8, V9

SYNC FAILURE
No vert. sync - V10, V11
No horiz. sync - V10, V12, V13
No vert. or horiz. sync - V10

SWEEP FAILURE
No raster, has sound - V13, V14, V15, V16, V17
No vertical deflection - V11
Poor vert. linearity or foldover - V11
Poor horiz. linearity or foldover - V13, V14, V15
Narrow picture -V13, V14, V15, V16, M1, M2
Vert. off freq.-V10, V11
Horiz. off freq. - V10, V12, V13

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal output tube, V14.
The possibility of RF interference from V14 during alignment is also eliminated by this procedure.
Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 Volt battery through 47KΩ to pin 1 of test receptacle on IF strip.
Connect the positive lead to chassis.
If distorted or unstable response curve is seen on scope during alignment it may be necessary to disable the local oscillator by shorting across the oscillator inductance (Position 2 to position 13 on the band switch.)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to point A Low side to chassis.	24.6MC (10MC Swp)	24.75MC	Non-interfering channel.	Vert. Amp. thru 47KΩ to point (B) Low side to chassis.	A1, A2	Connect 820Ω across terminals 1 & 4 of L12. Adjust for curve similar to fig. 1 centered about 24.75MC
2.	"	"	"	21.9MC	"	"	A3	Adjust for MINIMUM response at 21.9MC as in fig. 1.
3.	"	High side to point C Low side to chassis.	"	24.75MC	"	"	A4, A5	Leave 820Ω resistor connected as in step 1. Adjust for curve similar to fig 2.
4.	"	"	"	21.9MC 22.9MC 26.4MC	"	"	A6	Remove 820Ω resistor. Adjust A6 for response curve similar to fig. 3.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set contrast control at maximum contrast.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to pin 1 (grid) of 6AH6 (V5.). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe to point (D) Common to chassis.	A7, A8	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (E) Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Set contrast control at maximum contrast.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to pin 1 (grid) of 6AH6 (V5) . Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel.	Vert. amp. to point (D). Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C6. Adjust for curve of maximum amplitude and symmetry as in fig. 4.
6.	"	"	"	"	"	Vert amp to point E. Low side to chassis.	A9	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in fig 5. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to pin 1 (grid) of 6AH6 (V5). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe thru crystal detector (fig 6) to pin 11 of picture tube. Common to chassis.	A10	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the bias battery and short the AGC line to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193.25MC 197.75MC	10	Vert. amp. thru 47KΩ to point (B). Low side to chassis.	A11	Adjust to place the sound marker slightly higher in frequency than the 21.9MC trap dip. This is necessary to compensate for the frequency shift caused by removal of the tuner cover.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check all high band channels to see if if the markers can be properly placed within 30 degree rotation from mid-position on the tuning control. If not, adjust L8 by compressing or expanding the coil turns. If L8 is changed it may be necessary to readjust A11 on Channel 10.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
10.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A12	Expand or compress coil turns to place sound marker as in step 8.
11.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"	A13	"
12.	"	"	69MC (10MC Swp)	67.25MC 71.75MC	4	"	A14	"
13.	"	"	63MC (10MC Swp)	61.25MC 65.75MC	3	"	A15	"
14.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"	A16	"

ALIGNMENT INSTRUCTIONS (CONT.)

ANTENNA AND RF ALIGNMENT

Leave the AGC line shorted to chassis.
Disable the local oscillator by shorting across the entire oscillator inductance (position 2 to position 13) on the band switch.
The antenna coils are tuned to the video carriers and the RF coils are tuned to the sound carriers.
Preset the A18 screw to the middle of its coil.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	177MC (10MC Swp)	175.25MC 179.75MC	7	Vert. amp. thru 47KΩ to point C. Low side to chassis.	A17	Adjust to place markers within the limits of fig. 7.
16.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"	A18	Adjust to place markers within the limits of fig. 7. Recheck channel 7 and retouch A17 if necessary.
17.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"	A19	Check all high band channels for response within the limits of fig. 7. If necessary, the peak of the responses may be sharpened or broadened by altering the position of the ground end of the high frequency matching buss (A19). The normal position for the wire is approximately 3/16" from the switch shield.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
18.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A20, A21	Expand or compress coil turns for response curve within the limits of fig. 8.
19.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"	A22, A23	"
20.	"	"	69MC (10MC Swp)	67.25MC 71.75MC	4	"	A24, A25	"
21.	"	"	63MC (10MC Swp)	61.25MC 65.75MC	3	"	A26, A27	"
22.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"	A28, A29	"

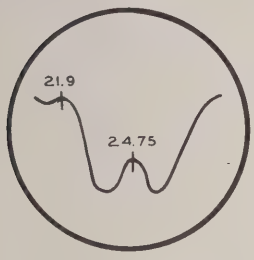


FIG. 1

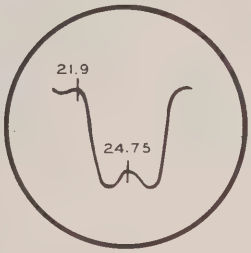


FIG. 2

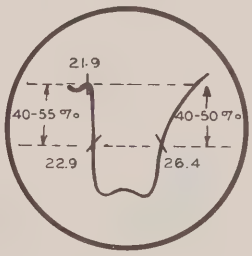


FIG. 3

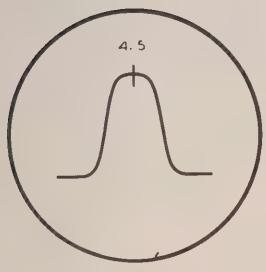


FIG. 4

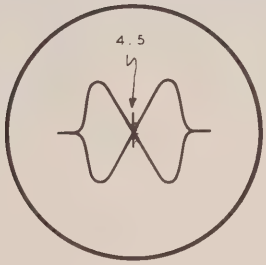


FIG. 5

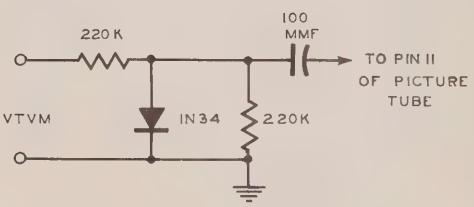


FIG. 6

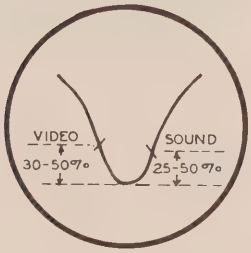


FIG. 7

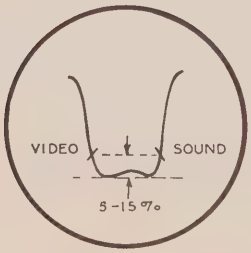
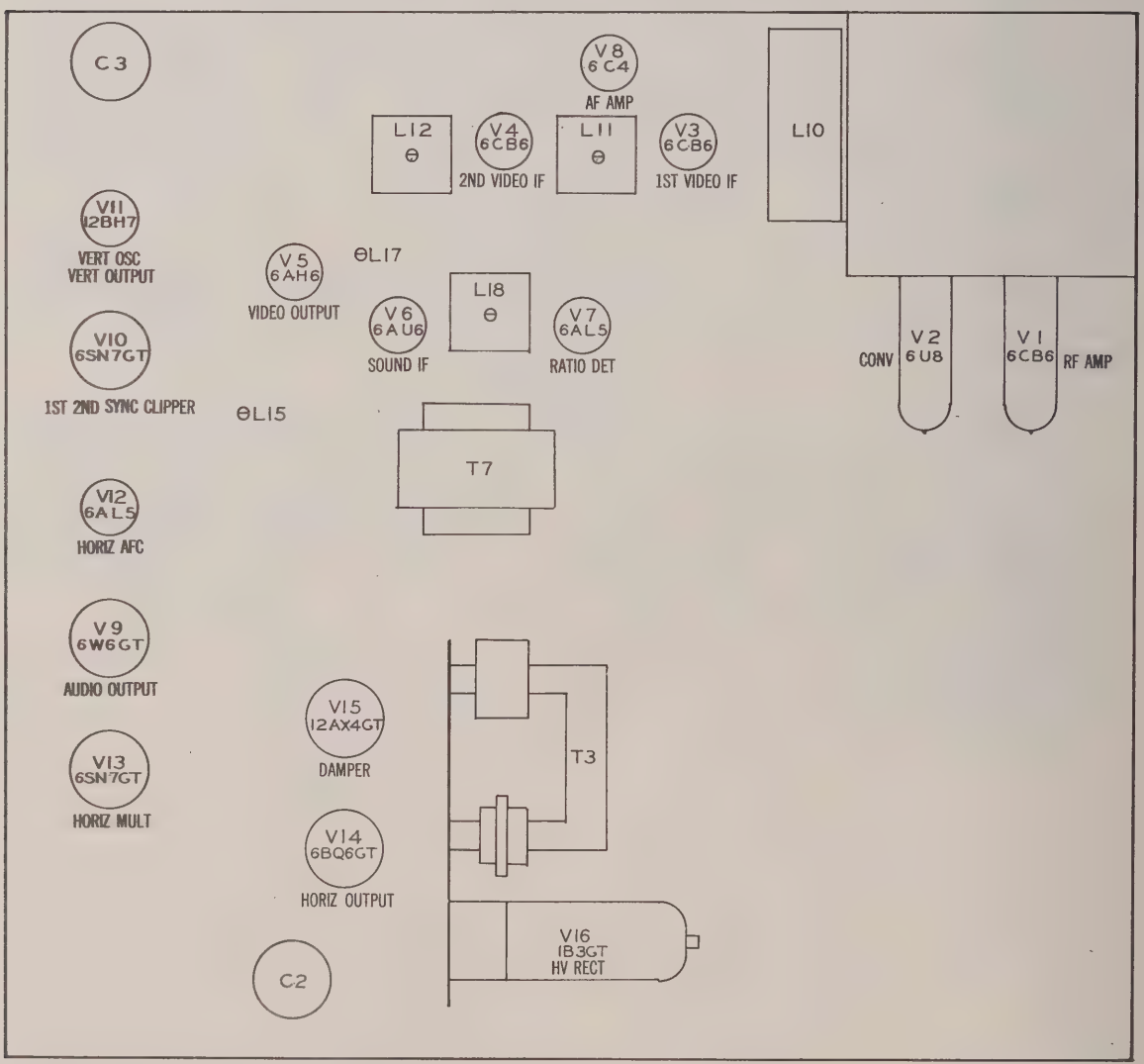


FIG. 8

RESISTANCE MEASUREMENTS

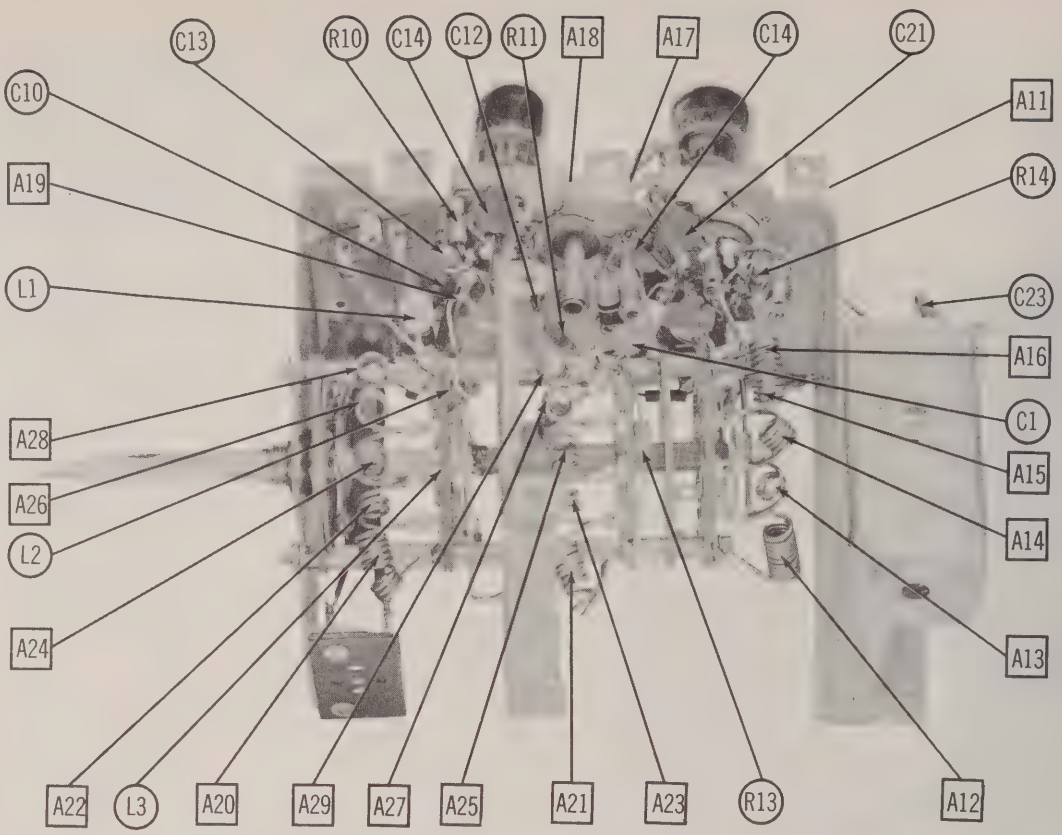
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	2Meg	33Ω	.1Ω	0 Ω	■220Ω	■3.5KΩ	0Ω		
V 2	6U8	■2.2KΩ	100KΩ	■330KΩ	.1Ω	0Ω	■220Ω	0Ω	0Ω	15KΩ
V 3	6CB6	1.5Meg	47Ω	.1Ω	0Ω	■1KΩ	■1KΩ	0Ω		
V 4	6CB6	.2Ω	82Ω	0Ω	.1Ω	■1KΩ	■1KΩ	0Ω		
V 5	6AH6	1 Meg	390Ω	.1Ω	0Ω	†4.9KΩ	†47KΩ	390Ω		
V 6	6AU6	1Ω	150Ω	0Ω	.1Ω	■2.2KΩ	■2.2KΩ	150Ω		
V 7	6AL5	INF	INF	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 8	6C4	†33KΩ	1 Meg	.1Ω	0Ω	†33KΩ	300KΩ	1.5KΩ		
V 9	6W6GT	INF	■.1Ω	†284Ω	†85Ω	†33KΩ	INF	■0Ω	70KΩ	
V 10	6SN7GT	■2.2Meg	†680KΩ	■0Ω	22KΩ	■11KΩ	2.2KΩ	0Ω	.1Ω	
V 11	12BA7	#750Ω	#2.2Meg	8KΩ	.1Ω	.1Ω	#2.2Meg	450KΩ	53Ω	0Ω
V 12	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	15KΩ	0Ω	15KΩ		
V 13	6SN7GT	55KΩ	†155KΩ	1.2KΩ	9.4Meg	†10KΩ	1.2KΩ	.1Ω	0Ω	
V 14	6BQ6GT	INF	.1Ω	INF	†8.2KΩ	330KΩ	†155KΩ	0Ω	0Ω	TopCap #20Ω
V 15	12AX4GT	INF	#65Ω	9 Meg	INF	†85Ω	#300KΩ	0Ω	.4Ω	
V 16	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TopCap #190Ω
V 17	20CP4F	.1Ω	1.8KΩ	Pin 10 †85Ω	Pin 11 270KΩ	Pin 12 0Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM OUTPUT OF M2
# MEASURED FROM PIN 3 OF V15
■ MEASURED FROM 135VDC LINE

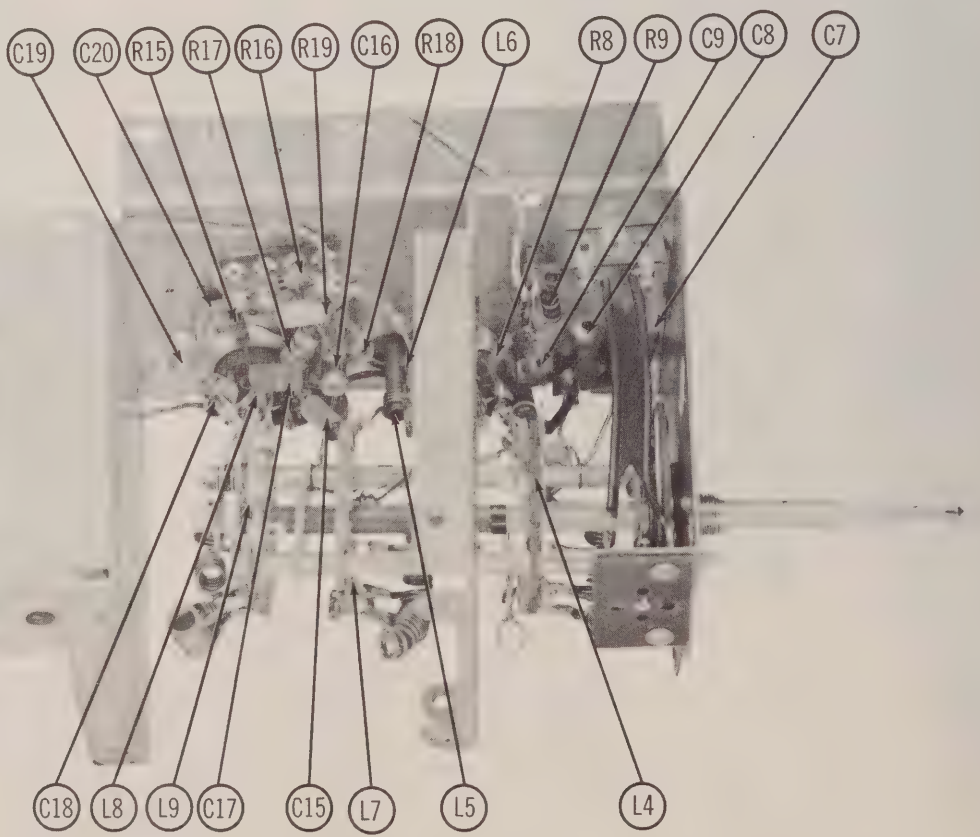


BOTTOM VIEW

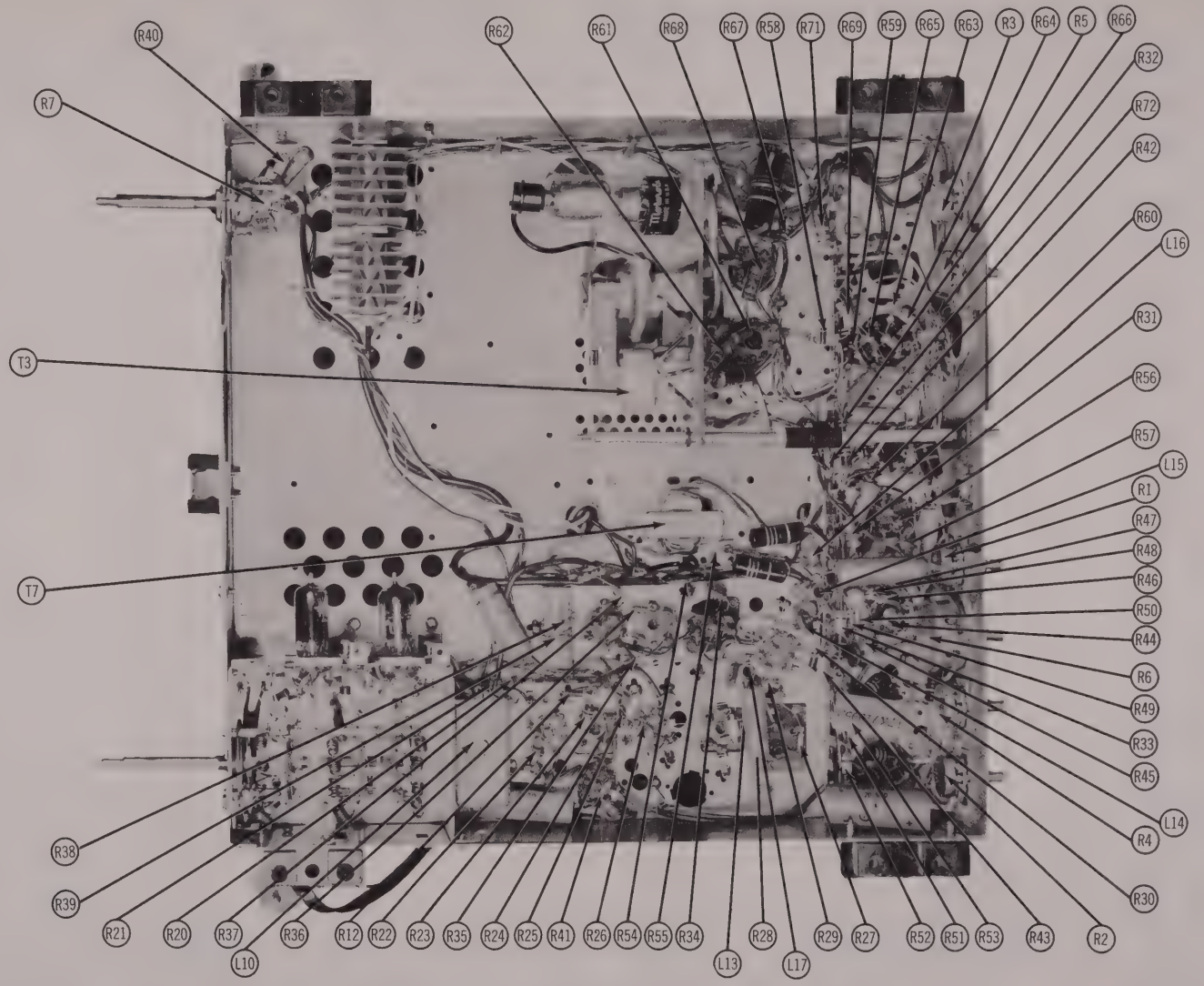
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	7CM	
V2	Converter	6U8	6U8	9-AE	
V3	1st Video IF Amp	6CB6	6CB6	7CM	
V4	2nd Video IF Amp	6CB6	6CB6	7CM	
V5	Video Output	6AH6	6AH6	7BK	
V6	Sound IF Amp	6AU6	6AU6	7BK	
V7	Ratio Detector	6AL5	6AL5	6BT	
V8	AF Amplifier	6C4	6C4	6BG	
V9	Audio Output	6W6GT	6W6GT	7AC	
V10	1st & 2nd Sync. Clipper	6SN7GT	6SN7GT	8BD	
V11	Vert. Oscillator-Vert.Output	12BH7	12BH7	8A	
V12	Horiz. AFC	6AL5	6AL5	6BT	
V13	Horiz. Multi.	6SN7GT	6SN7GT	8BD	
V14	Horiz. Output	6SQ6GT	6SQ6GT	8BD	
V15	Damper	12AX4GT	12AX4GT	4CG	
V16	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V17A	20CP4F		12D	① Circuit changes necessary ② 3/8" longer
B	20CP4C		12D	
		20CP4	12D	
		20CP4A ①	12D	
		20DP4 ②	12D	
		20DP4A ①②	12D	
		20HP4 ①②	12C	
		20HP4A ①②	12C	
		20MP4 ①②	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	200	150	23B702779	E4A133		UPE10105	FP218.1	TVL-1431		
C2A	▲100	300	23B712068	E4D491		UPT436		FP419.4	TVL-4561	Note 1
B	▲200	150								Note 1
C	▲10	300								Note 1
D	30	150								Note 1
C3A	▲200	150	23B710941	E4B357		UPE10101S	FP218.1		TVL-1431	Note 2
B	▲5	150				BR415			TVA-1402	Note 3
C4	20	450	23K710667	PR8S450/20		BR2045A		TC75	TVA-1709	
C5	10	50	23A90205	PR8S50/10		BR1005		TC32	TVA-1204	
C6	10	50	23A90205	PR8S50/10		BR105		TC32	TVA-1304	
C7	220		21K73715	SI220	D5-221		GP2K-221	UC-5322	5GA-T22	
C8	220		21K73715	SI220	D5-221		GP2K-221	UC-5322	5GA-T22	
C9	220		21K400941	SI220	D5-221		GP2K-221	UC-5322	5GA-T22	
C10	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C11	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C12	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C13	22		21R400942	SI22	D5-220		GP1K-220	UC-5422	5GA-Q22	
C14	1000		21R400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C15	12		21K114073				N330K-120			
C16	.5-3		1X710954		829-3			CT565A		
C17	1		21K114071		TCZ-1		NP0K-010			
C18	18		21K711246							
C19	.5-3		1X710954		829-3			CT565A		
C20	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C21A	800		21K400937	BPD-2X001	DD-2-102	TM5DD1	612-001	DCD-521	5HK-2D1	
B	800									
C22	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C23	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C24	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C26	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C28	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	4		21K38951				NP0K-040			
C30	25	200	SR9810	P488-25		P2P25		PT4025	3TM-P25	
C31	.1	100	SR9614	P288-1	DF-104	P2P1		PT401	2TM-P1	
C32	150		21R691948		TCM-150		N750L-151		5TCU-T15	
C33	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	30		21K470329				N150K-300			
C36	.1	400	SR490236	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C37	2.2		21A478274		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C38	68		21R400928				N470L-780			
C39	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C40	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C41	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C42	1000		21K700599	SI1000	D6-102		GP2L-102	UC-521	5HK-D1	
C43	470		21K400940	SI470	D6-471	5W5T5	GP2K-471	UC-5347	5GA-T47	
C44	1000		21K780599	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C45	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C46	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C47	.003	200	SR9820	P488-003	D6-302	PTE8D3	GP2-333-302	PT623	6TM-D3	
C48	.01	400	SR490226	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C49	.022	600	SR490255	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C50	220		21K73715	SI220	D5-221		GP2K-221	UC-5322	5GA-T22	
C51	.0047	400	SR490232	P488-0047	D5-472	PTE5D47	GP2-333-472	PT5247	5TM-D47	
C52	22		21K400942	SI22	D5-220	5W5Q25	GP1K-220	UC-5422	5GA-Q22	
C53	.05	400	SR9861	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C54	.0047	400	SR490232	P688-0047	D6-472	PTE8D47	GP2-333-472	PT8247	8TM-D47	
C55	.0047	400	SR490232	P488-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C56	.01	400	SR490226	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C57	.0047	400	SR490232	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C58	.047	400	SR490232	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C59	.047	400	SR490232	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C60	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	

CAPACITORS (CONT.)

ITEM No.	CAP.	VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	.001	600	8R490243	P688-001	D6-102	PTE8D1	GP2L-102	PT621	6TM-D1	
C62	.001	600	8R490243	P688-001	D6-102	PTE8D1	GP2L-102	PT621	6TM-D1	
C63	.001	1000	8R490268	P1068-001		PTE10D1		PT1631	MB-D1	
C64	.01	400	SR9850	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C65	.0033	400	8R490220	P688-0033	D6-332	PTE8D33	GP2-333-332	PT6233	6TM-D33	
C66	.01	400	8R490226	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C67	100		SR9861	BD00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C68	390	500	21R6664	1469-0004		5R5T4		MCB243	MS-34	
C69	.0047	400	8R490249	P688-0047	D6-472	PTE8D47	GP2-333-472	PT6247	6TM-D47	
C70	680	500	21R2741	1474-0007		2R5T7			MS-37	
C71	5000		21A470789	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C72	.1	600	SR490236	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C73	180	3000	21K701873							
C74	.1	200	8R490210	P288-1	DF-104	P2P1		PT401	2TM-P1	

Note 1. C2C is 5MFD single unit (Part #23A711003) in early models.
When C2 is 3-section unit, part # is 23B702451-0, A, B, C
Note 2. C3A is 140MFD single unit (Part #23B484097) in early models.
Note 3. C3B is single unit (Part #23K710761) in early models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5.1Meg	½	18A702441		AG-8S-S		U-85	Brightness - Note 1
B	Shaft		Not Req.		RS-2		Not Req.	Attach to R1A
R2A	5Meg	½	18A702443	Q11-141	AG-8S-S	AB-87	U-85	Vert.Size-Note 2
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Not Req.	Attach to R2A
R3A	100K	½	18A702468	Q11-128	AG-49-S	AB-40	U-41	Horiz. Hold - Note 3
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Not Req.	Attach to R3A
R4A	750Ω	½	18A702475	Q11-105	AG-8-S			Vert. Linearity
B	Shaft		Not Req.	Not Req.	RS-2			Attach to R4A
R5A	850KΩ	½	18K711278	Q11-137	AG-61-S		U-54	Vert. Hold - See Note 4
B	Shaft		Not Req.	Not Req.	RS-2		Not Req.	Attach to R5A
R6A	2000Ω	4	18A703326		A10-2000	SVP-998	M2MP	Focus-Wire Wound
B	Shaft		Not Req.		RS-2	Not Req.	Not Req.	Attach to R6A
R7A	2500Ω	½	18K702864	Q3-322 *	RTV-344			Contrast-Tapped ⑥ 500Ω-Panel
B	1Meg	½						Volume & Sw.-Tap ⑥ 300KΩ - Rear

*CONCENTRIKIT EQUIVALENT -KIT K-4, BASE ELEMENTS & SHAFTS B1T-111X & P1-212 (Panel), B1J-137 X & R4-228 (Rear) & SWITCH 76-1.
Note 1. Add 100KΩ resistor in series with clockwise terminal and ground.
Note 2. Add 1Meg resistor in series with clockwise terminal and positive side of C4.
Note 3. Add 39KΩ resistor in series with clockwise terminal and grid of V13.
Note 4. Add 330KΩ resistor in series with clockwise terminal and ground.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R8	22KΩ	½	6R6397	BTS-22K	
R9	470KΩ	½	6R6032	BTS-470K	
R10	33Ω	½	6R6036		
R11	3300Ω	½	6R6036	BTS-3300	
R12	220Ω	½	6R3933	BTS-220	
R13	22KΩ	½	6R6397		
R14	15KΩ	½	6R2119	BTS-15K	
R15	1000Ω	½	6R6301	BTS-1000	
R16	1000Ω	½	6R6301	BTS-1000	
R17	4700Ω	½	6R6039	BTS-4700	
R18	100KΩ	½	6R6075		
R19	330KΩ	½	6R6304	BTS-330K	
R20	1000Ω	½	6R6301	BTS-1000	
R21	6800Ω	½	6R6428	BTS-6800	
R22	47Ω	½	SR2108		
R23	1000Ω	½	6R6301	BTS-1000	
R24	8200Ω	½	6R2004	BTS-8200	
R25	82Ω	½	SR2035	BTS-82	
R26	1000Ω	½	6R6301	BTS-1000	
R27	5600Ω	½	6R6117	BTS-5600	
R28	1.5Meg	½		BTS-1.5Meg	Note 1
R29	1Meg	½	6R6048	BTS-1Meg	
R30	47KΩ	1	6R488040	BTA-47K	
R31	4700Ω	2	6R6071	BTB-4700	
R32	100Ω	½	6R6018	BTS-100	
R33	10KΩ	½	6R6054	BTS-10K	
R34	150Ω	½	SR3902	BTS-150	
R35	2200Ω	½	6R6069	BTS-2200	
R36	120Ω	½	6R5551	BTS-120	
R37	33KΩ	½	6R6052	BTS-33K	
R38	6800Ω 5%	½	6R6428	BTS-6800-5%	
R39	6800Ω 5%	½	6R6428	BTS-6800-5%	
R40	68KΩ	½	6R6001	BTS-68K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R41	1500Ω	½	6R6038	BTS-1500	
R42	33KΩ	½		BTS-33K	
R43	470KΩ	½	6R6033	BTS-470K	
R44	2.2Meg	½	6R3927	BTS-2.2Meg	
R45	680KΩ	½	6R6228	BTS-680K	
R46	22KΩ	½	6R6032	BTS-22K	
R47	2200Ω	½	6R6069	BTS-2200	
R48	6800Ω 5%	½	6R490839	BTS-6800-5%	
R49	3900Ω	½	6R5659	BTS-3900	Note 2
R50	560KΩ	½	6R5697	BTS-560K	
R51	22KΩ	½	6R6028	BTS-22K	
R52	10KΩ	½	6R6054	BTS-10K	
R53	8700Ω	5	17A710650		
R54	1800Ω	½	6R2089	BTS-1800	
R55	3300Ω	½	6R5581	BTS-3300	
R56	100KΩ	½	6R6031	BTS-100K	
R57	100KΩ	½	6R6031	BTS-100K	
R58	4.7Meg	½	6R2122	BTS-4.7Meg	
R59	4.7Meg	½	6R2122	BTS-4.7Meg	
R60	15KΩ	½	6R2119	BTS-15K	
R61	150KΩ	1	6R410053	BTA-150K	
R62	150KΩ	1	6R410053	BTA-150K	
R63	560Ω	½	6R6117	BTS-5600	
R64	1200Ω	½	6R6393	BTS-1200	
R65	150K	½	6R6398	BTS-150K	
R66	4700Ω	½	6R6060	BTS-4700	
R67	330KΩ	½	6R2096	BTS-330K	
R68	8200Ω	½	6R5725	BTS-8200	
R69	4700Ω	½	6R6060	BTS-4700	
R70	5Ω	5	1K711574		
R71	330Ω	2	6R410055	BTS-330	
R72	120Ω	½	6R5551	BTS-120	

Note 1. Early production models use a 2.2Meg resistor in this application.
Note 2. Early production models use a 3300Ω resistor in this application.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP	REPLACEMENT DATA: MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6"	EM	3.55.	50C703061	ST-189	6E9TS	① Alternate 6" EM Speaker
				50C710802 ①	Mod. F6-X		② 8" EM Speakers used in Models 20K6 and 20K6B.
				50K700950 ②			
				50C703096 ②			
				50C703337 ②			

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	115VAC	12.6VAC	6.3VAC	6.3VAC	25B711847				
	① .79A	② .62A	③ 7.6A	④ 1.24A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	83Ω	235Ω	25K702439	A 8125	A-3000 ②	TBO-3 ③	A-97X ④	Vert. Osc. Trans.
			25K710730 ①				A-97X ⑤	
T3	210Ω tap @ 1700Ω	0Ω	24K711937					Horiz. Output Trans.
T4	730Ω tap @ 1Ω		25B702445	A-8140 ④	A-3081 ①	TSO-6 ⑤	A-103X ②	Vert. Output Trans
T5A	45Ω		24K711584	DY-10 ③	MDF-30 ⑤	TY-4 ④	Y-20 ⑥	Horiz. Deflection Coils
B	3.8Ω		24K711585 ⑦					Vert. Deflection Coils
			24K711581 ⑦ ⑧					
			24K711587 ⑦					
			24K711583 ⑦ ⑧					
T6	1560Ω		24K711573		MF-5 ⑦			

1. Alternate Vert. Osc. Trans.
2. Drill one new mtg. hole.
3. Mount on top of chassis.
4. Drill new mtg. holes.
5. Alternate Deflection Yoke.
6. Require two Rubber Bumpers Part No. 35A700603
7. Fabricate new mtg. bracket or use original coil case.
*Use blue and yellow leads together.
† original network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	2.43KΩ	3.55Ω	199Ω	.36Ω	25B710925	A 3876	A-2928	RG-2	S-1X	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	MERIT PART No.	IRC PART No.	NOTES
L1	Ant. Impedance Matching Coil	.1Ω		24A790033			
L2	Ant. Loading Coils	0Ω		24K703079			Low Band
L3	Ant. Loading Coils	0Ω		24K703078			High Band
L4	Ant. Coils	0Ω		24K703005			Channels 2 thru 6
L5	RF Coil	0Ω		24K703076			Channel 13
L6	RF Choke	1.5Ω				CL-1	10 Microhenries -Some Models use 3.3 Microhenries (Part #24K792577)
L7	RF Coils	0Ω		24K703002			Channels 2 thru 6
L8	Osc. Coil	0Ω		24K703077			Channel 13
L9	Osc. Coils	0Ω		24C703001			Channels 2 thru 6
L10	1st. Video IF	.4Ω	.2Ω	24B702983	TV-100 *		
L11	2nd. Video IF	.5Ω	.2Ω	24B702982	TV-100 *		
L12	3rd. Video IF	.3Ω		24B711412			Includes Trap, & Peaking Coil (Part #24B711413)
L13	Series Peaking Coil	2.6Ω		24B711413	TV-180		28 Microhenries
L14	Series Peaking Coil	17Ω		24K703319	TV-188 †		Wound on 6.8KΩ resistor
L15	4.5MC Trap	2.1Ω		1X792736	TV-151		
L16	Shunt Peaking Coil	9.5Ω		24K710140	TV-184		203 Microhenries
L17	Sound IF	1Ω		1X790341	TV-151		
L18	Ratio Det.	2.5Ω	.2Ω CT	24B702343	TV-110		Tertiary Winding .1Ω
L19	Horiz. Osc.	52Ω		24K701558	TV 163		

* Drill new mtg. holes.
† Parallel with 6.8K resistor.

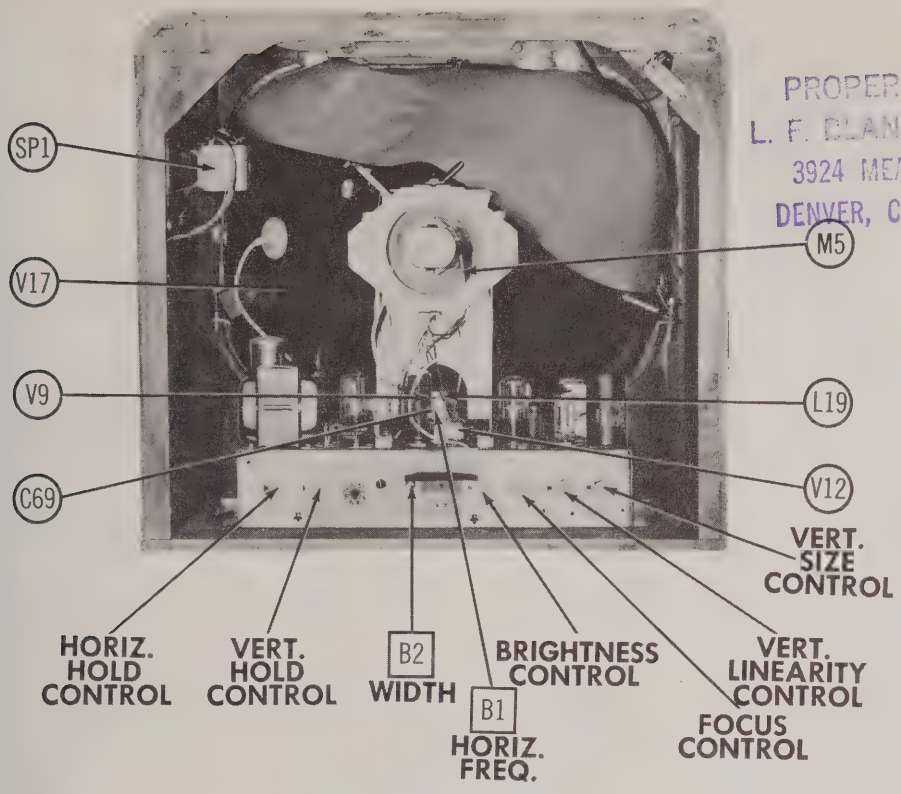
SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: MOTOROLA PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	NOTES
M1	.180	48B700555	NH-5	6Q4	1038	88300	
M2	.180	48B700555	NH-5	6Q4	1028	88300	

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA: MOTOROLA PART No.	NOTES
M3	RF Tuner	LX703295	TT17
M4A	Crystal	48K712198	IN60
B	Crystal	48K712199	Alternate
C	Crystal	48K712205	Alternate
D	Crystal	48K711053	Alternate
E	Crystal	48K711077	Alternate
M5A	Ion Trap	24K703092	
B	Ion Trap	24A703090	Alternate
C	Ion Trap	24K703013	Alternate
	Knob	36K701088	Channel Selector (Models 20K6 & 20K6B)
	Knob	36K701087	Contrast (Models 20K6 & 20K6B)
	Knob	36C700894	Off/on Volume - Fine Tuning (Models 20K6 & 20K6B)
	Knob	36C700888	Channel Selector
	Knob	36K700887	Contrast (Models 20T2A, 20T2BA, 20T3 & 20T3B)
	Knob	36C700888	Off/on Volume -Fine tuning (Models 20T3 & 20T3B)
	Knob	36A485457	Vert. & Horiz. Hold (Models 20K6, 20K6B, 20T3 & 20T3B)
	Knob	36K780522	Vert. & Horiz. Hold (Models 20T2A & 20T2BA)
	Back Cover	LX711838	Complete with Picture Tube cover & line cord (Models 20K6, and 20K6B)
	Back Cover	LX711914	Complete with Picture Tube Cover & line cord (Models 20T2A and 20T2BA).
	Back Cover	LX711679	Complete with Picture tube cover and line cord (Models 20T3 and 20T3B)
	Cover	15K782068	Picture Tube
	Mask	13D711666	
	Safety Glass	61D702697	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Normally the horizontal hold control will have a sync range of approximately 70°. If the control is too critical, adjust as follows:

1. Short out the horizontal oscillator coil. This may be done by shorting pins 1 and 6 on the test socket at rear of chassis.
2. With the centering lever, move the picture to the left so that the right edge of the raster is seen. Adjust the horizontal hold control to the middle of its sync range and note the width of the blanking pulse. The blanking pulse appears as a vertical gray bar at the right edge of the raster.
3. Remove the short from the horizontal oscillator coil.
4. Adjust the horizontal frequency slug (B1) until the same amount of blanking pulse is visible as in step 2.

Adjust the horizontal size slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally. This control also affects the vertical size, it may be necessary to adjust the vertical size control.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 5 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect built-in antenna and speaker.
4. Remove 2 screws. Remove antenna bracket.
5. Remove 4 speaker nuts. Remove speaker.
6. Remove 4 chassis bolts. Remove chassis.

NOTE : FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

MOTOROLA
MODELS 62L1U, 62L2U, 62L3U, (Ch. HS-308)

PROPERTY OF
L. F. BLANKENSHIP
3921 MEADE ST.
DENVER, COLORADO

MOTOROLA
MODELS 62L1U, 62L2U, 62L3U, (Ch. HS-308)

MOTOROLA
MODELS 62L1U, 62L2U, 62L3U, (Ch. HS-308)

MOTOROLA MODEL 62L1U

TRADE NAME	Motorola Models 62L1U, 62L2U, 62L3U (Ch. HS-308)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (Five)	Types 1U4 RF Amp., 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC/DC or 9 Volts "A" Supply & 90 Volts "B" Supply in Pack Form
RATING	.12 Amp. @ 117 Volts AC or 50MA @ 9 Volts DC & 17MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side f of the signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V2). Low side to B-.	455 KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	High side to stator plates of rear section of tuning gang (green loop lead). Low side to B-.	1620 KC	"	"	A5	Replace chassis bottom cover. Adjust A5 for maximum output.
3.	"	"	1400 KC	Tune to 1400 KC signal	"	A6	Adjust for maximum output.
4.		Loop	1400 KC	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
	If receiver is off calibration or tracks badly at low frequencies perform steps 5, 6 and 7.						
5.		Loop	600 KC	Tune to 600KC	Across voice coil	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver, Adjust for maximum output.
6.		"	1620 KC	Tuning gang fully open	"	A5	"
7.		"	1400KC	Tune to 1400KC	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det.-AVC-AF Amp.	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲100	150	23B611598							
B	■80	150								
C	▲200	10								
C2	.05	100	8R9805	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	100		21K115639	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C4	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C5	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C6	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C7	.02	200	8R9817	P488-02	DF-203	PTE4S2		PT412	2TM-S2	
C8	.05	100	8K71213	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C9A	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322	34C3	
B	2000		21B482847	BPD-002	DD-202	TM5D2	801-002	DC-522		
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C10	10000		21R482726	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C11	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C12	.05	400	8K471635	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C13	.1	200	8R490210			PJ2P1		PT401	2TM-P1	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	18A611533	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

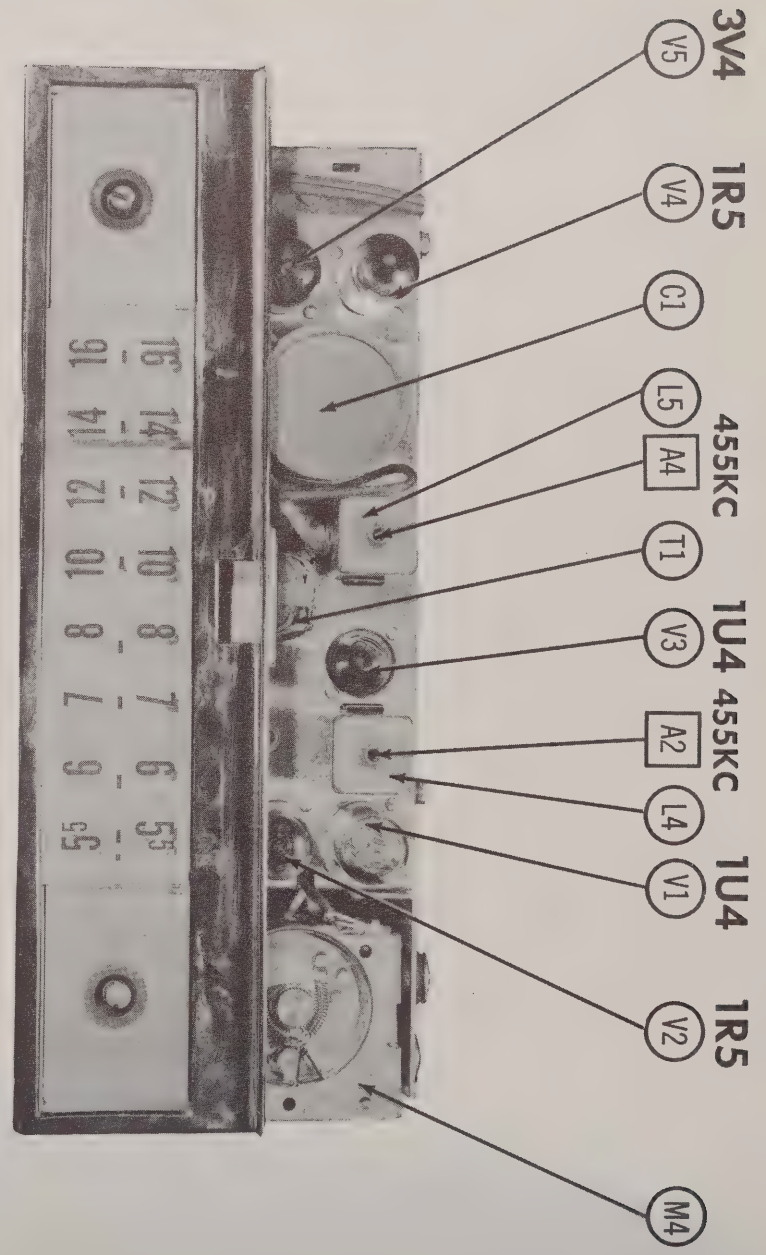
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES	ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R2	3.3Meg	⅛	6R2118	BTS-3.3Meg		R11	1Meg	⅛	6R6004	BTS-1Meg	
R3	2.2Meg	⅛	6R6433	BTS-2.2Meg		R12	4.7Meg	½	6R2122	BTS-4.7Meg	
R4	5.6Meg	⅛	6R3988	BTS-5.6Meg		R13	3.3Meg	½	6R2118	BTS-3.3Meg	
R5	2.2Meg	⅛	6R3927	BTS-2.2Meg		R14	150Ω	2½	17A76986		
R6	1000Ω	⅛	6R6229			R15	820Ω	½	6R6269	BTS-820	
R7	100KΩ	⅛	6R6031	BTS-100K		R16	2000Ω	10	17B692047	1 3/4A-2000	
R8	33KΩ	⅛	6R6410	BTS-33K		R17	220Ω	½	6R6270	BTS-220	
R9	10Meg	⅛	6R2109	BTS-10Meg		R18	470Ω	½	6R6090	BTS-470	
R10	10Meg	⅛	6R2109	BTS-10Meg							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	8.2KΩ	3.3Ω	600Ω	.52Ω	25B692076	A-3329	A-2927 ①	RO-301 ①	S-8X ①	① Drill one new mtg. hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	VIKING PART No.	QUAM PART No.	
SP1	4"x6"	PM	3.3Ω	50K611496	46J6	46A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	
L1	Loop Ant.	1.5Ω		24B620015		
L2	RF Coil	7Ω	10Ω	24B611539		Secondary tapped @ 5.2Ω
L3	Osc. Coil	3.4Ω	9.7Ω	24B611459		
L4	Input IF	33Ω	33Ω	24K600824	BC-352	
L5	Output IF	33Ω	33Ω	24K600824	BC-353	

SELENIUM RECTIFIER

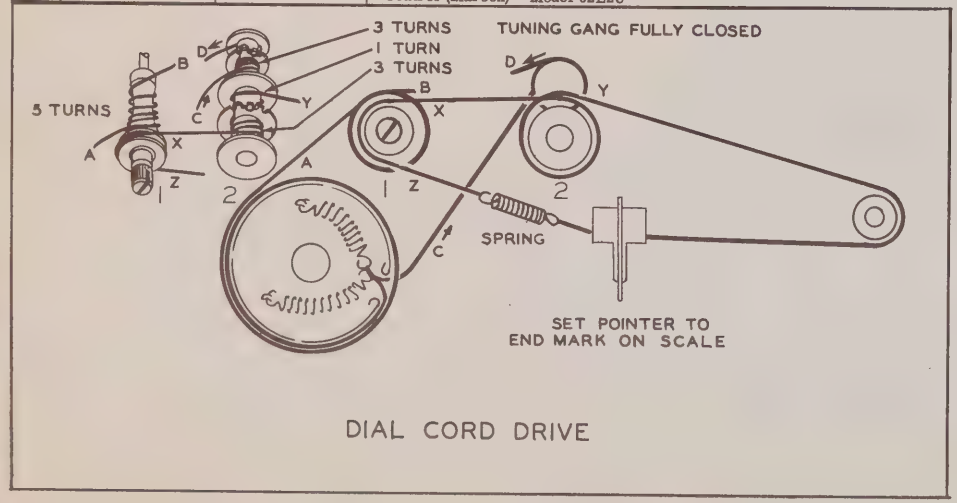
ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	MOTOROLA PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.065	48K692077	NB5	5M4	1003	6S75	

BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V & 90V				756			T6Z60	

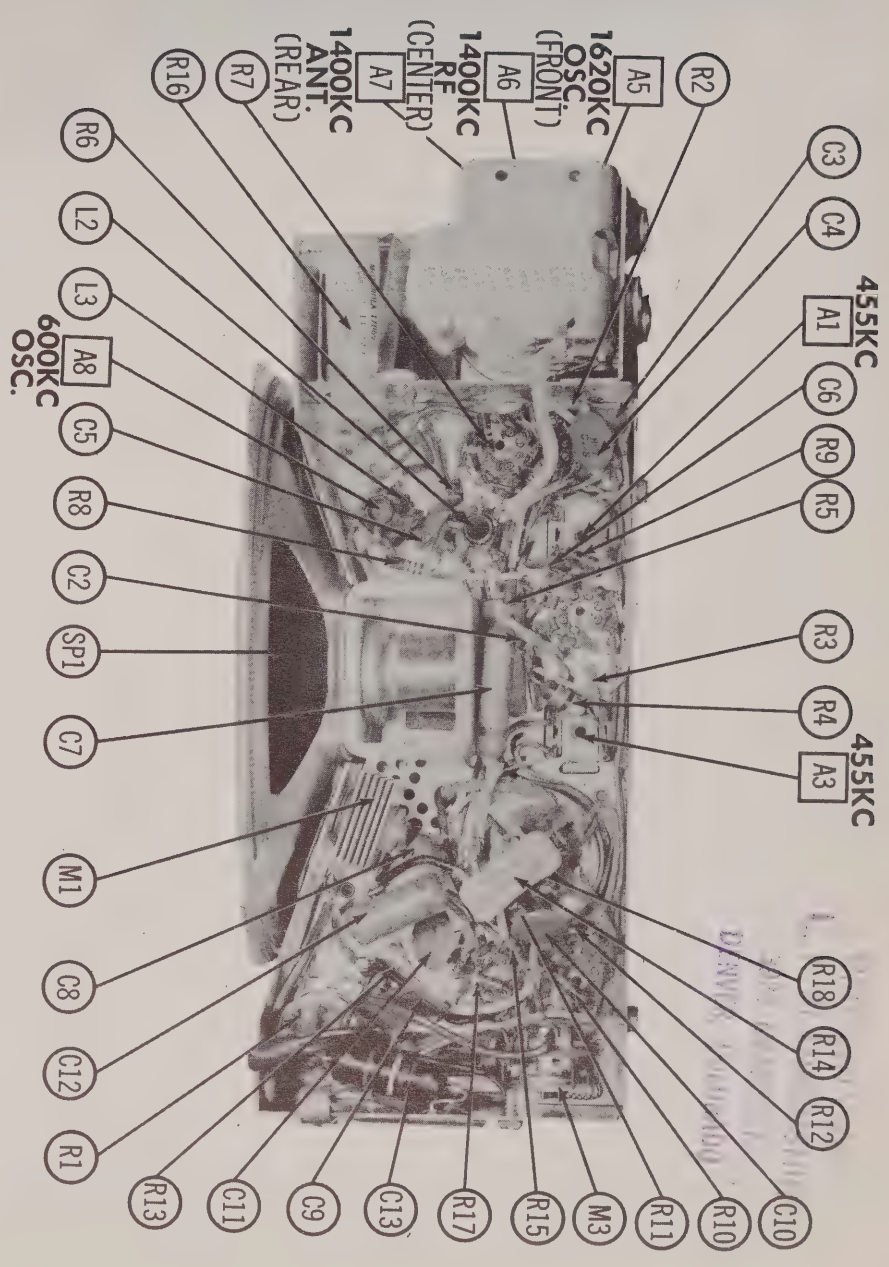
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Switch	40B611599	Power Change
M4	3 Gang Var. Cap.	19C611559	(13-355MMF, 11-285MMF, 9-178MMF)
	Dial Pointer	52A611594	With Slider
	Dial Scale	34C620113	
	Cabinet	16E611384	Green - Model 62L1U
	Cabinet	16K611385	Maroon - Model 62L2U
	Cabinet	16K611386	Gray - Model 62L3U
	Knob	36B611600	Control (Green) - Models 62L1U & 62L3U
	Knob	36K611601	Control (Maroon) - Model 62L2U



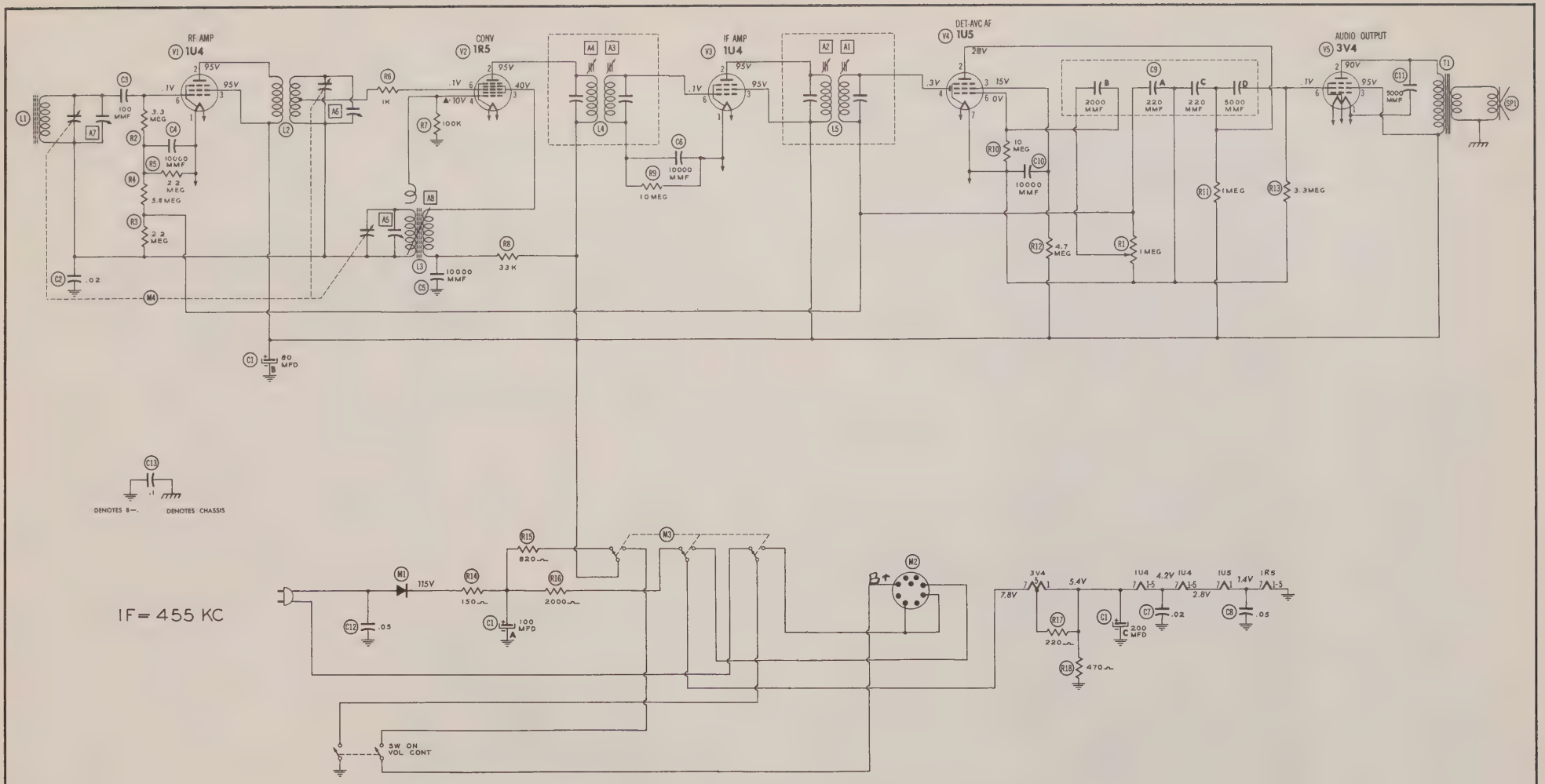
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



MOTOROLA
MODEL 62L2U, (Ch. HS-308)

MOTOROLA
MODEL 62L2U, (Ch. HS-308)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†970Ω	†970Ω	1.0Meg	*	5.2Meg	*
V 2	1R5	0Ω	†970Ω	†34KΩ	100KΩ	0Ω	3.2Meg	*
V 3	1U4	*	†970Ω	†970Ω	3.2Meg	*	10Meg	*
V 4	1U5	*	†1Meg	†4.7Meg	1 Meg	INF	10Meg	*
V 5	3V4	*	†1.6KΩ	†970Ω	INF	*	3.3Meg	*

ALL MEASUREMENTS TAKEN WITH POWER CHANGE-OVER SWITCH IN AC (LINE) POSITION
† MEASURED FROM OUTPUT OF M1
* TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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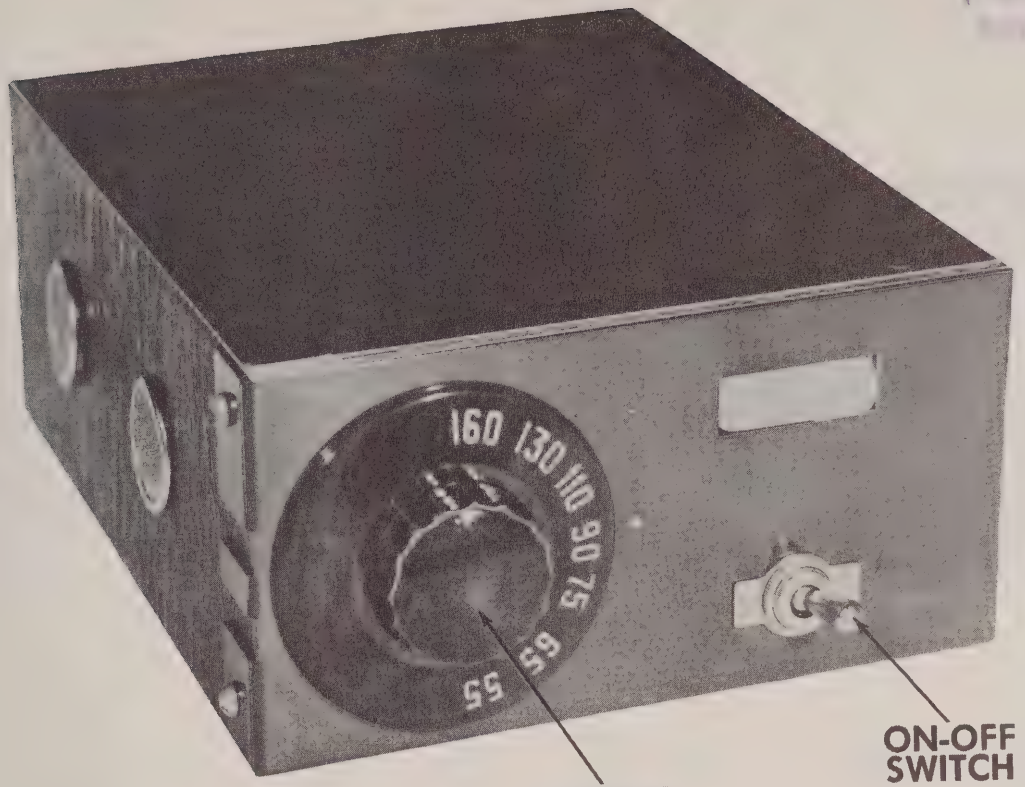
183-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PENTRON
MODEL AM-T



PENTRON
MODEL AM-T

TRADE NAME	Pentron Model AM-T
MANUFACTURER	Pentron Corp., 221 E. Cullerton Ave., Chicago 16, Ill.
TYPE SET	AC Operated AM Superheterodyne Tuner With Self-Contained Power Supply
TUBES (Three)	Types 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp.
POWER SUPPLY	110-120 Volts AC RATING .15 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	550-1700 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning gang fully closed and set dial with the last "5" in 55 (reading the dial clockwise) even with the index mark on tuner case.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates of rear section of tuning gang. Low side to chassis.	455KC (400~Mod.)	Tuning gang fully open.	Across voice coil	A1, A2 A3, A4	Connect output of tuner to audio amplifier. Adjust for maximum output.
2.	"	"	1700 KC	"	"	A5, A6	Adjust A5 for maximum output. If unable to reach peak with A5 alone. Adjust A6 on opposite side of capacitor section.
3.		Loop	1400 KC	Tune in 1400 KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

PENTRON MODEL AM-T

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PENTRON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	6BE6	6BE6	7CH	
V2	IF Amplifier	6BA6	6BA6	7BK	
V3	Det.-AVC-AF Amp	6AV6	6AV6	7BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PENTRON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■20	150		AFH3-05		UP22215		FP311.2	TVL-3433	
B	▲20	150								
C	20	150								
C2	2.2				TCZ-2.2		NP0K-2R2		5TCCB-V22	
C3	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4	50			SI50NP0	TCZ-47		NP0-333-500	ZT-545	5TCC-Q5	
C5	130	500		1468-00015	D6-151	5W5T15	GP2K-151	MC236	1FM-315	
C6	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	500	500		1468-0005	D6-501	5W5T5	GP2K-501	MC245	1FM-35	
C8	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PENTRON PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R1	22KΩ	1/2		BTS-22K	
R2	100Ω	1/2		BTS-100	
R3	2.2Meg	1/2		BTS-2.2Meg	
R4	470KΩ	1/2		BTS-470K	
R5	100KΩ	1/2		BTS-100K	
R6	4.7Meg	1/2		BTS-4.7Meg	
R7	100KΩ	1/2		BTS-100K	
R8	1500Ω	1/2		BTS-1500	

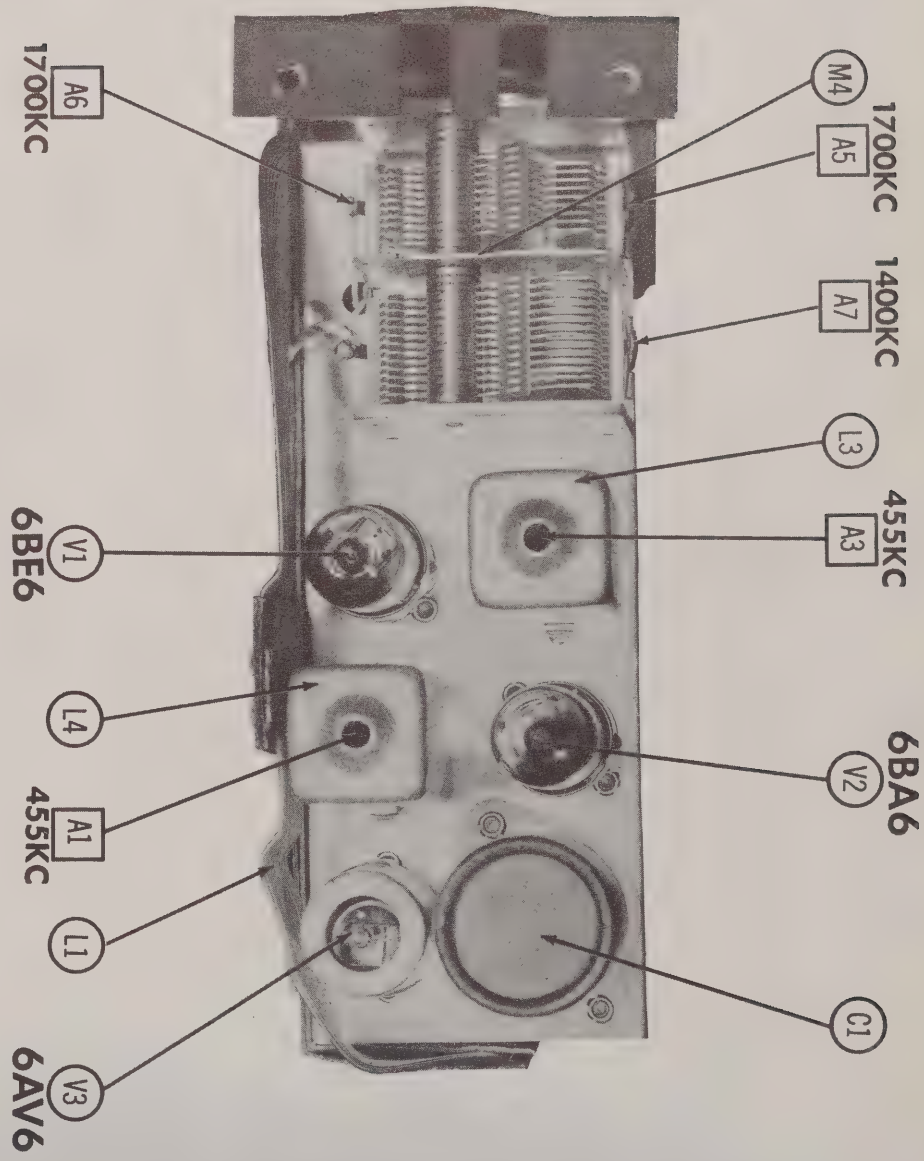
TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: PENTRON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @.15A	117VAC .022ADC	6.3VAC @.87A		352-19				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PENTRON PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
L1	Loop Ant.	1.4Ω				
L2	Osc. Coil	5.4Ω			BC-381	Tapped @ 4.6Ω
L3	Input IF	14Ω	14Ω		BC-352	
L4	Output IF	14Ω	14Ω		BC-353	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	PENTRON PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.022A			8J1 ①			① Solder one lug to capacitor lug, use wire to make other connection.

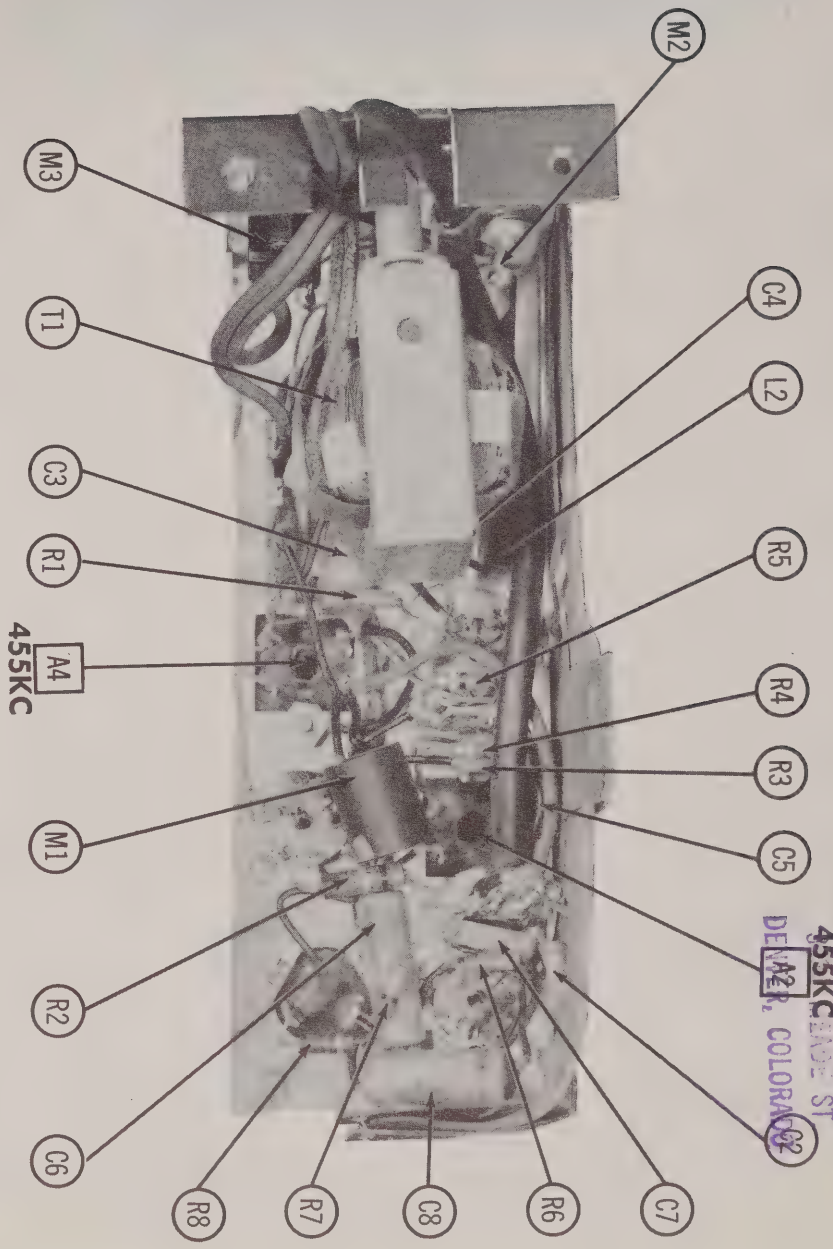
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PENTRON PART No.		
M2		125V.	1/10 W.				Neon

MISCELLANEOUS

ITEM No.	PART NAME	PENTRON PART No.	NOTES
M3 M4	Switch 2 Gang Var. Cap		on/off (15-455MMF, 37-205MMF)

CHASSIS—BOTTOM VIEW



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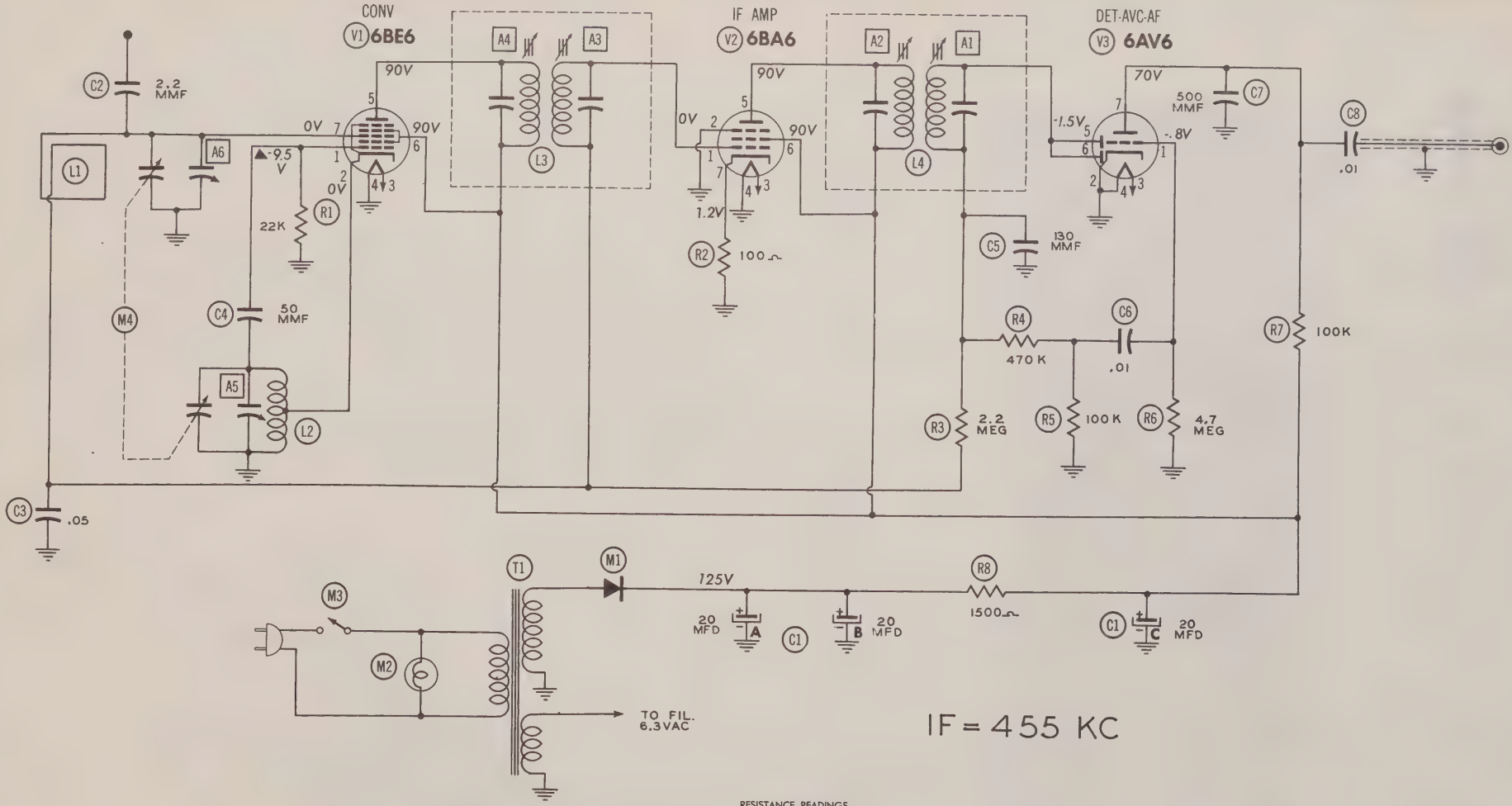
PENTRON MODEL AM-T

PENTRON MODEL AM-T



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	22KΩ	.8Ω	.5Ω	0Ω	†1.5KΩ	†1.5KΩ	2.8Meg
V 2	6BA6	2.8Meg	0Ω	.5Ω	0Ω	†1.5KΩ	†1.5KΩ	100Ω
V 3	6AV6	4.7Meg	0Ω	.5Ω	0Ω	570KΩ	570KΩ	†100KΩ

† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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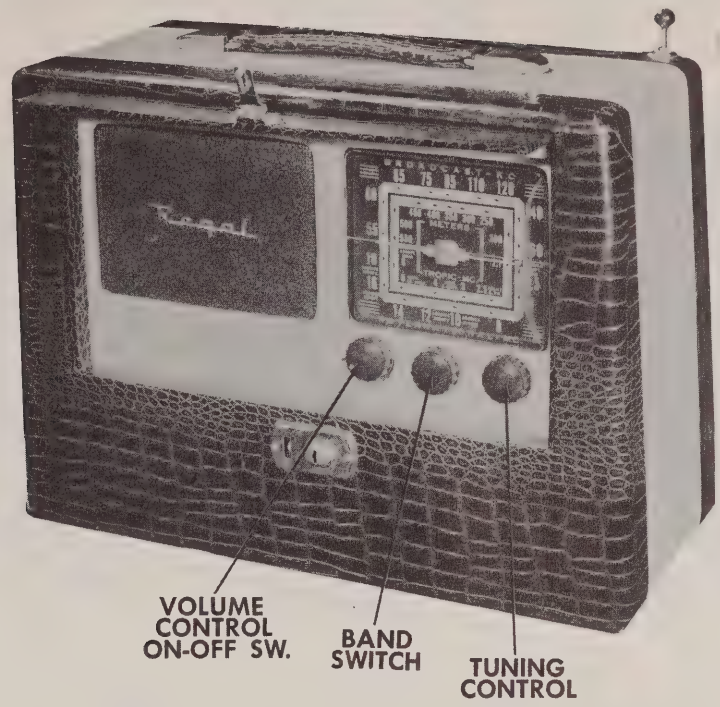
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

REGAL
MODEL P-175



REGAL
MODEL P-175

TRADE NAME	Regal Model P-175
MANUFACTURER	Regal Electronics Corp., 605 W. 130 th. St., New York, N.Y.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (SIX)	Types 1R5 Conv., 1U4 1st. IF Amp., 1U4 2nd. IF Amp., 1U5 (or) 1LH4 Det.-AVC-AF Amp., 3V4 Audio Output, 117Z6GT Rectifier.
POWER SUPPLY	110-120 Volts AC/DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply
RATING	.20 Amp. @ 117 Volts AC (or) 50 MA @ 9 Volts DC & 17.5 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1650 KC SHORT WAVE 2.1-6.5MC, 6.4-18.3 MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates, front section of tuning gang. Low side to chassis.	455KC (400~Mod)	BC	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	200MMF	High side to antenna terminal. Low side to chassis.	1650KC	"	"	"	A5	Adjust for maximum output.
3.	"	"	1500KC	"	Tune to 1500KC signal.	"	A6	"
4.	"	"	600KC	"	Tune to 1600KC signal.	"	A7	Rock tuning gang and adjust A7 for maximum output. Recheck A5 and A6.
5.	400Ω Carbon Resistor	"	6.5MC	Tropic	Tuning gang fully open.	"	A8	Adjust for maximum output.
6.	"	"	6.0MC	"	Tune to 6MC signal.	"	A9	"
7.	"	"	18.3MC	International	Tuning gang fully open.	"	A10	"
8.	"	"	17.0MC	"	Tune to 17MC signal.	"	A11	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	IF Amplifier	1U4	1U4	6AR	
V4A	Det. -AVC-AF Amp	1U5	1U5	6BW	
B	Det. -AVC-AF Amp	1LH4	1LH4	5AG	
V5	Audio Output	3V4	3V4	6VX	
V6	Rectifier	117X6GT	117X6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: REGAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	150	60-118	AFH4-33		UP4415CD-10		FP426.9		
B	■40	150								
C	▲100	50								
D	100	50								
C2	.01	400	50-116	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C3	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	3.5	500	T-55-64							Note 1
C5	100	500	T-55-44	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C6	3300	500								Note 2
C7	200	500		1469-0002		5R5T2		MCB237	MS-32	Note 3
C8	1500	500	T-55-54	1464-0015		1R5D15		MCB456		
C9	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C10	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C11	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C12	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	Note 4
C13	250		T-55-45	SI250	D6-251	5W5T25	GP2K-251	UC-5325	5GA-T25	
C14	.25	200	50-132	P488-25		PJ2P25		PT4025	2TM-P25	
C15	100		T-55-44	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C16	100		T-55-44	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C17	.005	400	50-137	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C18	.05	200	50-109	P288- 05	DF-503	PJ2S5		PT415	2TM-S5	Note 5
C19	.005	600	50-137	P688-005	DF-503	PTE6D5	GP2-333-502	PT625	6TM-D5	
C20	.0022	600	50-110	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C21	.05	600	50-128	689ZGXY-05		PJ6S5		PT615	6TM-S5	

Note 1. Some Models use 4MMF in this application.
Note 2. Some Models use 3500MMF in this application (Part #T-55-65)
Note 3. Not used when C6 is 3500MMF
Note 4. Some Models use .1MFD in this application (Part #50-136)
Note 5. Used only when V4 is 1U5.

CONTROLS

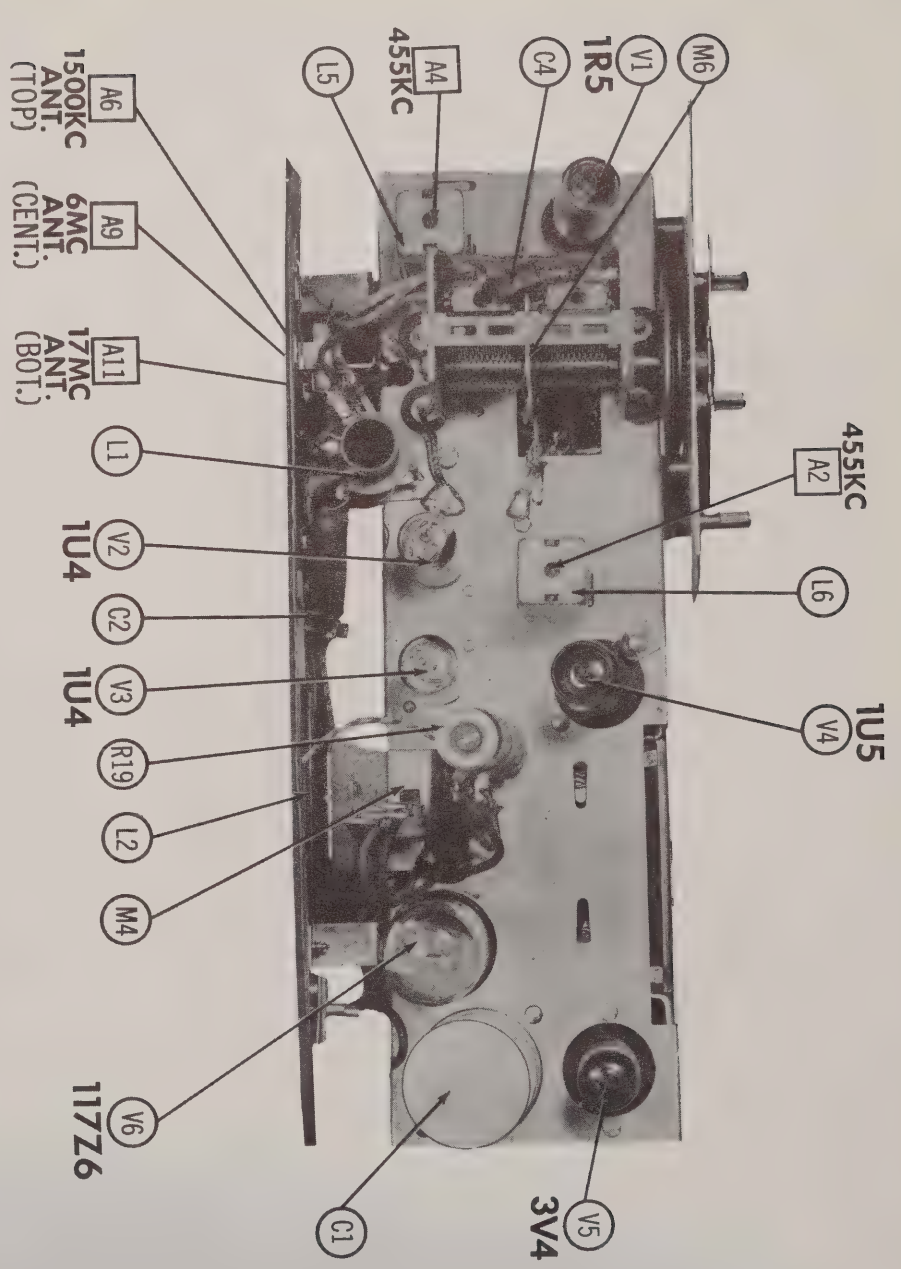
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	1/2	20-109	Q13-137	AG-63-X	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	NOTES
R2	330Ω	1/2		BTS-330	Note 1
R3	100KΩ	1/2	T-65-37	BTS-100K	
R4	1000Ω	1/2	T-65-106	BTS-1000	
R5	10Ω	1/2	T-65-3		
R6	150Ω	1/2	T-65-6		Note 7
R7	6800Ω	1/2	T-65-24	BTS-6800	
R8	100KΩ	1/2	T-65-37	BTS-100K	
R9	3.3Meg	1/2	T-65-101	BTS-3.3Meg	
R10	3.3Meg	1/2	T-65-101	BTS-3.3Meg	
R11	3.3Meg	1/2	T-65-101	BTS-3.3Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	NOTES
R15	2.2Meg	1/2	T-65-49	BTS-2.2Meg	
R16	1800Ω	1/2	T-65-15	BTS-1800	Note 3
R17	2200Ω	1/2	T-65-60	BTS-2200	Note 4
R18	1500Ω	1/2	T-65-5	BTS-1500	
R19A	30Ω	40	70-112		
B	450Ω				
C	500Ω				
R20	2200Ω	2		BTB-2200	Note 5
R21	330Ω	2	T-65-137	BTB-3300	
R22	2000Ω	10	70-106	1 3/4A-2000	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA REGAL PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R12	100KΩ	1/2	T-65-37	BTS-100K	
R13	6.8 Meg	1/2	T-65-51	BTS-6.8Meg	Note 2
R14	680KΩ	1/2	T-65-43	BTS-680K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R23	10KΩ	1/2	T-65-27	BTS-10K	
R25	4.7Meg	1/2		BTS-4.7Meg	Note 6

Note 1 Some models use a 560Ω resistor in this application.
Note 2 Some models use a 2.2Meg resistor in thisaapplication.
Note 3 Some models use a 2200Ω resistor in this application.
Note 4 Some models use a 1000Ω resistor in this application.
Note 5 Some models use a 2200Ω (2Watts) resistoriin this application.
Note 6 Used only when V4 is 145.
Note 7 Some models use a 100Ω resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	8.3KΩ	4Ω	375Ω	.4Ω	P-334	A-8114	A-2900	RO-301	S-8X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA REGAL PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	4Ω	110-113	ST-105 Mod. P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA REGAL PART No.	REPLACEMENT DATA MERIT PART No.	NOTES
L1A	SW Ant. Coil	.7Ω	0Ω	30-200		International Band
B	SW Ant. Coil	16.5Ω	.9Ω	30-200		Tropical Band
L2	Loop Ant.	.2Ω	2.2Ω	30-197		Standard BC Band
L3A	SW Osc. Coil	0Ω	.8Ω	30-198		International Band
B	BC Osc. Coil	5Ω	1.7Ω	30-198		Standard BC Band
L4	SW Osc. Coil	.6Ω	.6Ω	30-199		Tropic Band
L5	Input IF	26Ω	26Ω	30-177 *	BC-352	* Alternate Part No. 30.202
L6	Output IF	26Ω	26Ω	30-177	BC-353	

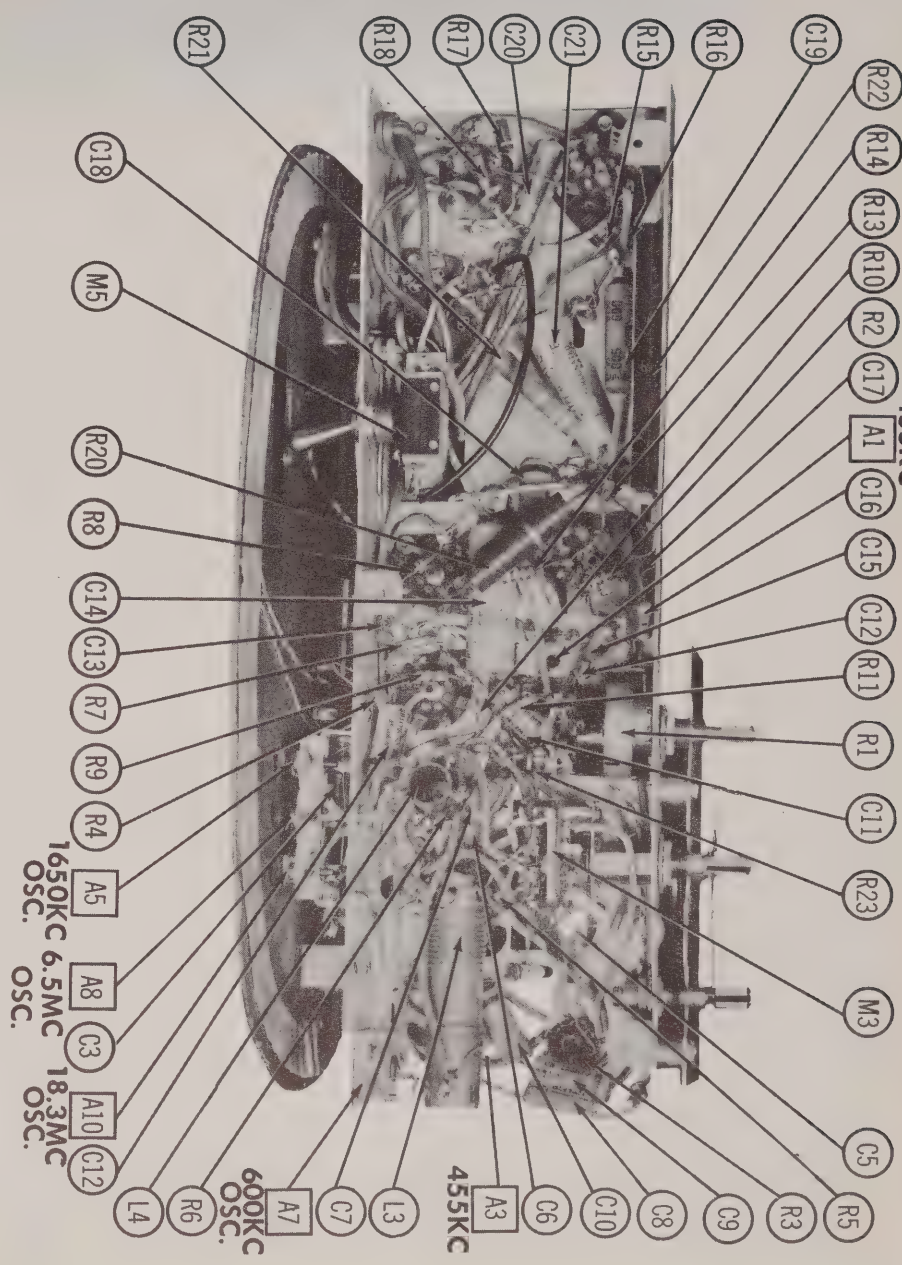
BATTERIES

ITEM No.	VOLTAGE	REGAL PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	4.5V		746			F3			2 used in series
M2	4.5V			482			M3		2 used in series

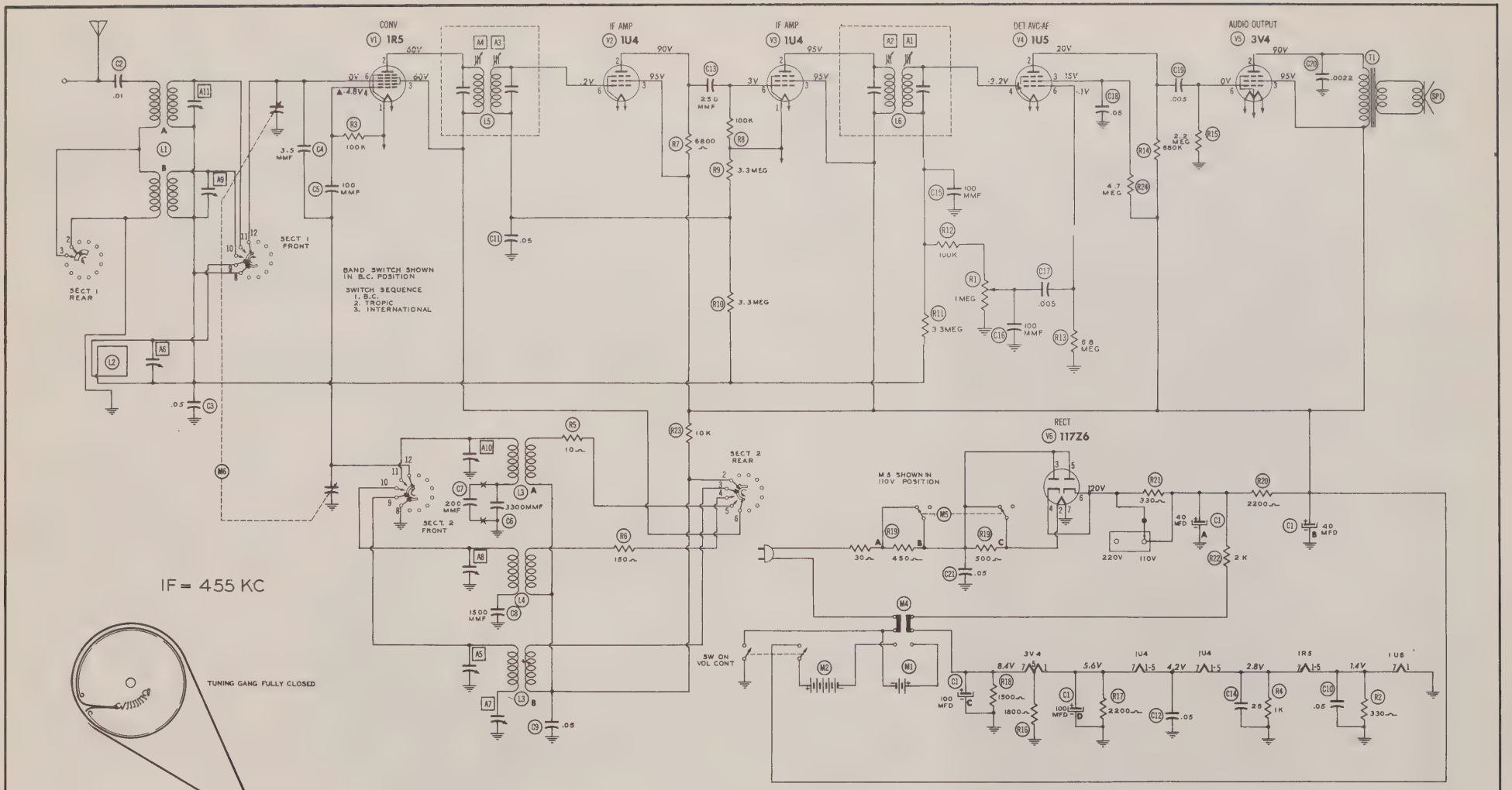
MISCELLANEOUS

ITEM No.	PART NAME	REGAL PART No.	NOTES
M3	Switch	95-117	Band Change
M4	Switch	95-118	Power Change-over
M5	Switch	95-119	110-220 Volt Line Switch
M6	2 Gang Var. Cap.	40-124	(14-485MMF, 14-485MMF)
A6	Trimmer Strip	40-125	BC Ant. Adj.
A9			SW #1 Ant. Adj.
A11			SW #2 Ant. Adj.
A5	Trimmer Strip	40-123	BC Osc. Adj.
A8			SW #1 Osc. Adj.
A10			SW #2 Osc. Adj.
A7	Trimmer	40-103	BC Osc. Padder Adj. (280-1050MMF)
	Cabinet	105-1590	
	Knob	125-118	Plain
	Knob	125-120	Gold Dot
	Dial Scale	25-176	
	Dial Pointer	25-177	

CHASSIS—BOTTOM VIEW



REGAL MODEL P-175



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	1R5	*	†12KΩ	†12KΩ	100KΩ	*	2.6Meg	*	
V 2	1U4	*	†8KΩ	†2.2KΩ	2.3Meg	*	2.3Meg	*	
V 3	1U4	*	†2.2KΩ	†2.2KΩ	†2.2KΩ	*	100KΩ	*	
V 4	1U5	0Ω	†880KΩ	†4.7Meg	1.1Meg	†880KΩ	6.8Meg	*	
V 5	3V4	*	†2.5KΩ	†2.2KΩ	INF	*	2.2Meg	*	
V 6	117Z6GT	INF	117Ω	117Ω	2KΩ	117Ω	INF	0Ω	2KΩ

ALL MEASUREMENTS TAKEN WITH POWER CHANGEOVER SWITCH IN AC LINE POSITION
BAND SWITCH IN BROADCASE POSITION (550-1600KC)
LINE VOLTAGE CHANGEOVER SWITCH IN 110-125V. AC-DC POSITION ONLY
† MEASURED FROM PINS OF 4 & 5 OF V6
▲ TAKEN IN VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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183-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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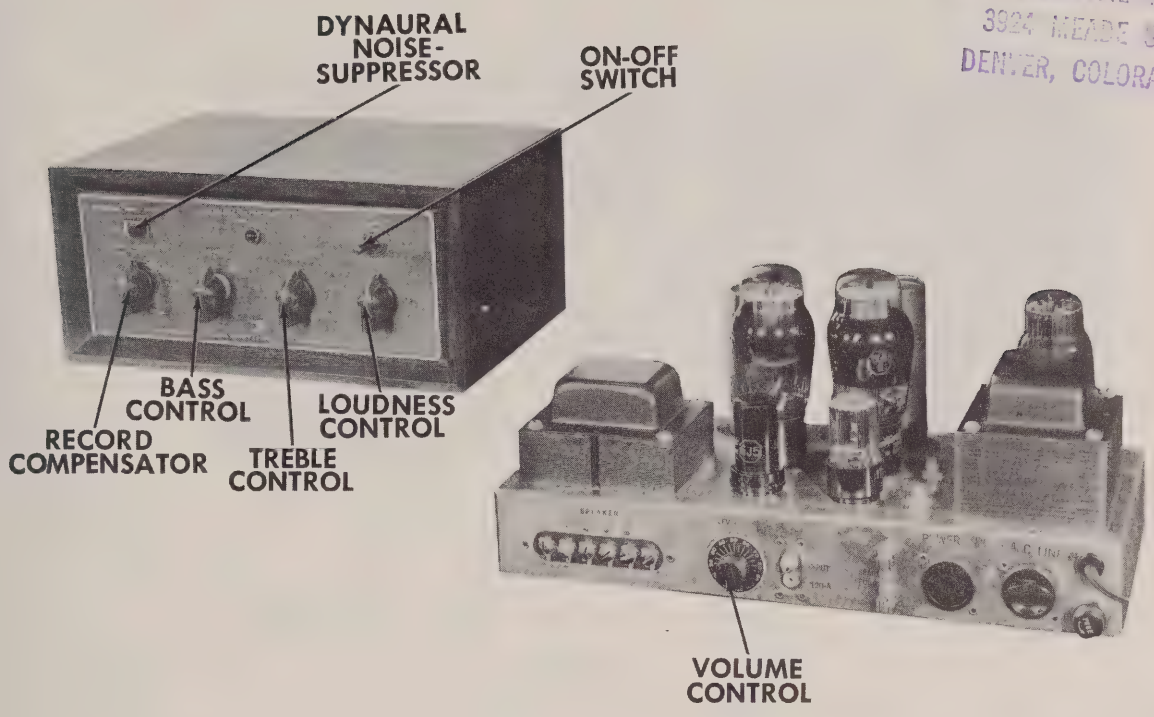
SCOTT
MODEL 214-A (120-A, 220-A)



SCOTT
MODEL 214-A (120-A, 220-A)

TRADE NAME	Scott Model 214-A (Comprised of Model 120-A Pre-Amp. & Model 220-A Power Amp.)
MANUFACTURER	H.H. Scott, Inc., 385 Putnam Ave., Cambridge, Mass.
TYPE SET	AC Operated Audio Amplifier With Equalizer & Pre-Amplifier
TUBES (EIGHT)	Types 12AX7 AF Amp., (2) 12AU7 AF Amp., 6J5 AF Amp., 6SN7 AF Amp.-Phase Inv., (2) 6L6G Audio Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.2 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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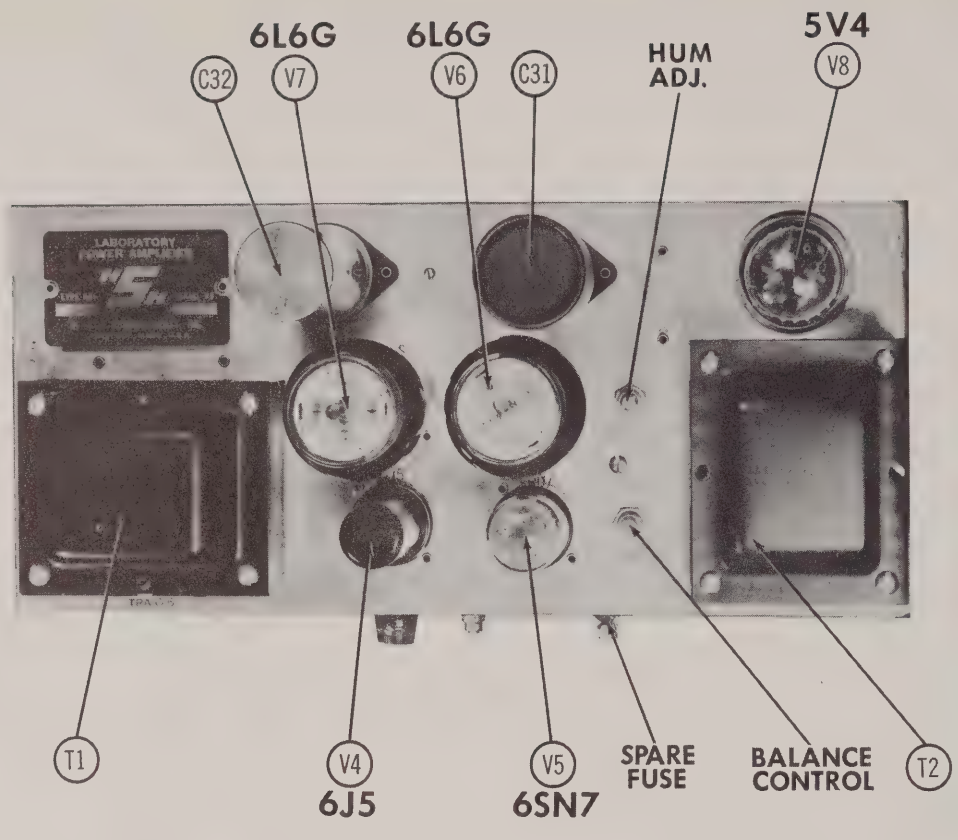
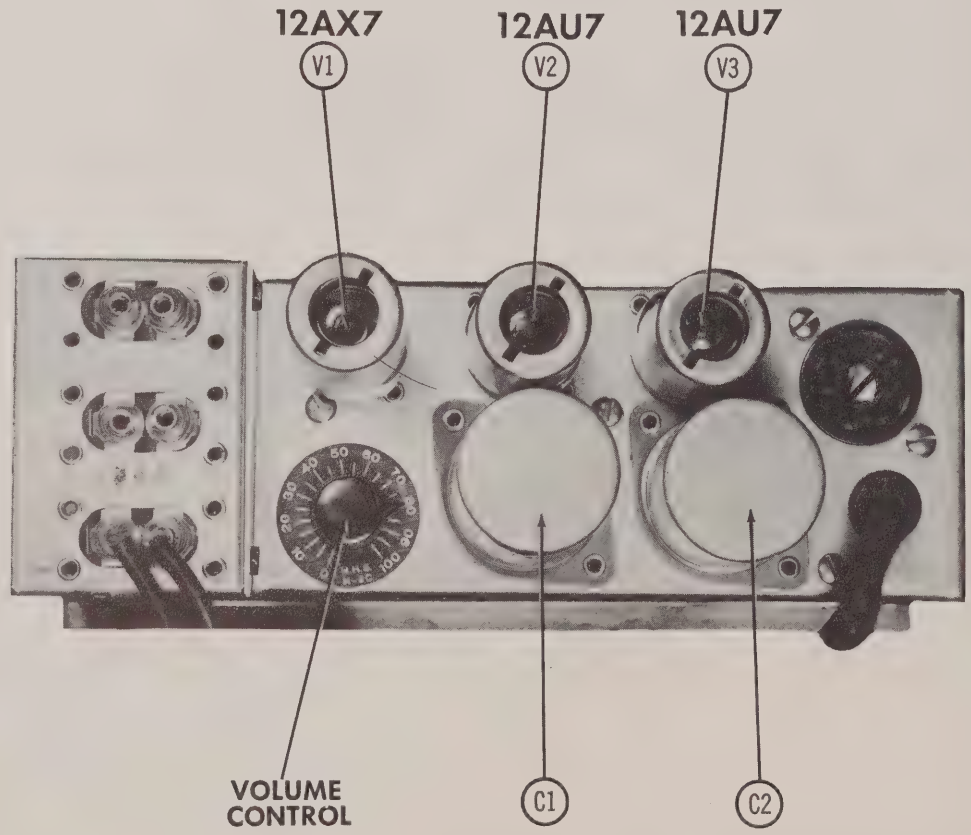
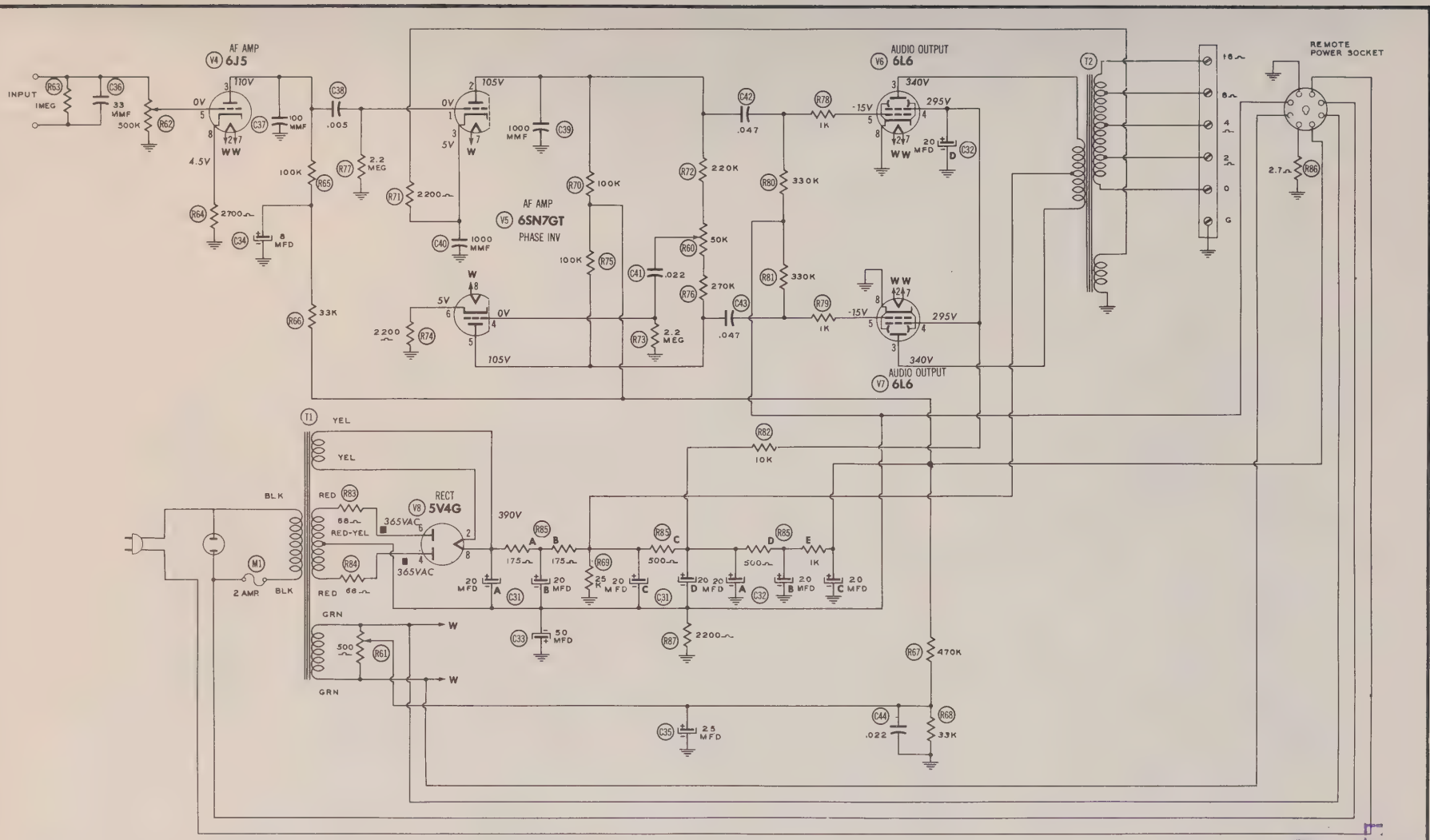


TOP VIEW - MODEL 220-A



TOP VIEW - MODEL 120-A



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 4	6J5	0Ω	33KΩ	†135KΩ	†35KΩ	27Ω	INF	33KΩ	2.7KΩ
V 5	6SN7GT	2.2Meg	†100KΩ	2.2KΩ	2.2Meg	†100KΩ	2.2KΩ	33KΩ	33KΩ
V 6	6L6G	0Ω	33KΩ	†375Ω	†10KΩ	330KΩ	INF	33KΩ	0Ω
V 7	6L6G	0Ω	33KΩ	†375Ω	†10KΩ	330KΩ	INF	33KΩ	0Ω
V 8	5V4G	INF	18KΩ	INF	161Ω	INF	157Ω	INF	18KΩ

† MEASURED FROM PIN 8 OF V8.
■ MEASURED FROM CENTER TAP OF T1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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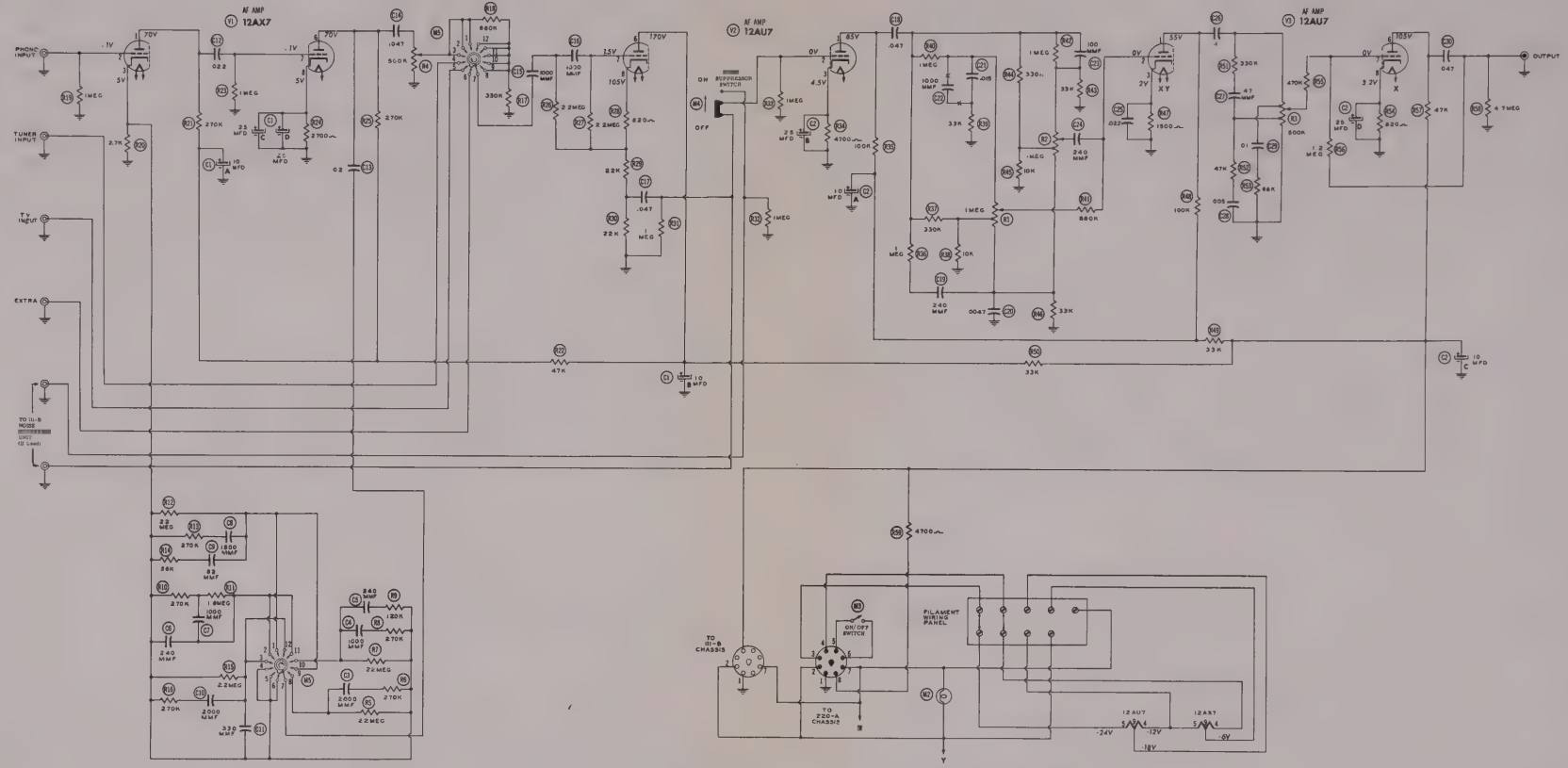
SCHEMATIC - MODEL 220-A

PROPERTY OF
L. F. CLANTON
3924 [illegible]
DENVER, COLO.
183-13

H. H. SCOTT
MODEL 214-A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	150KΩ	1MEG	0.7KΩ	0Ω	1MΩ	750KΩ	1MEG	3.1KΩ	0Ω
V2	12AU7	1MEG	330KΩ	4.7KΩ	1KΩ	1MΩ	240KΩ	3.3MEG	440Ω	1KΩ
V3	12AU7	1MEG	880KΩ	1.5KΩ	85KΩ	1MΩ	194KΩ	670KΩ	850Ω	85KΩ

ALL MEASUREMENTS TAKEN IN "TUNER" POSITION
* MEASURED FROM PIN 6 OF V3

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltages measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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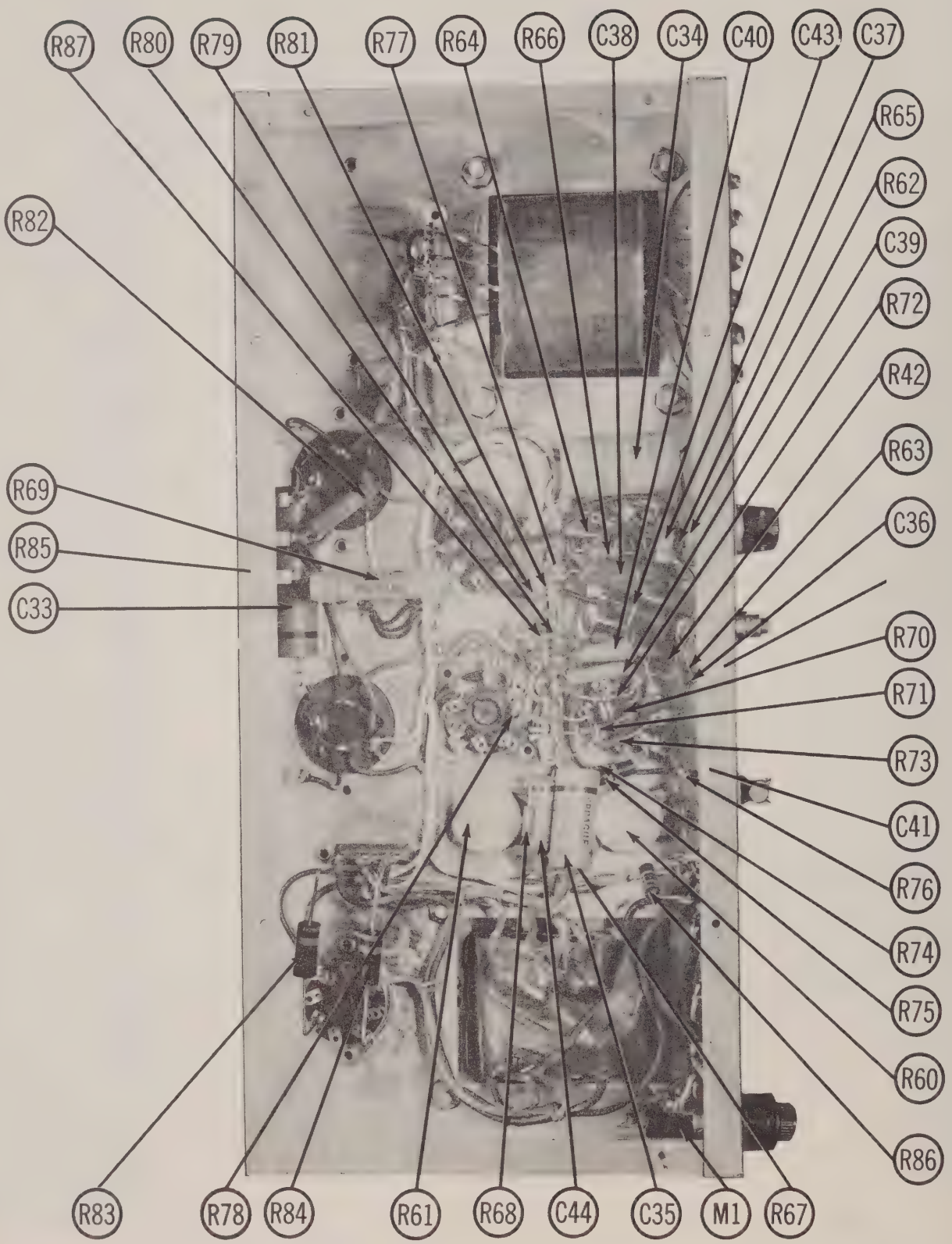
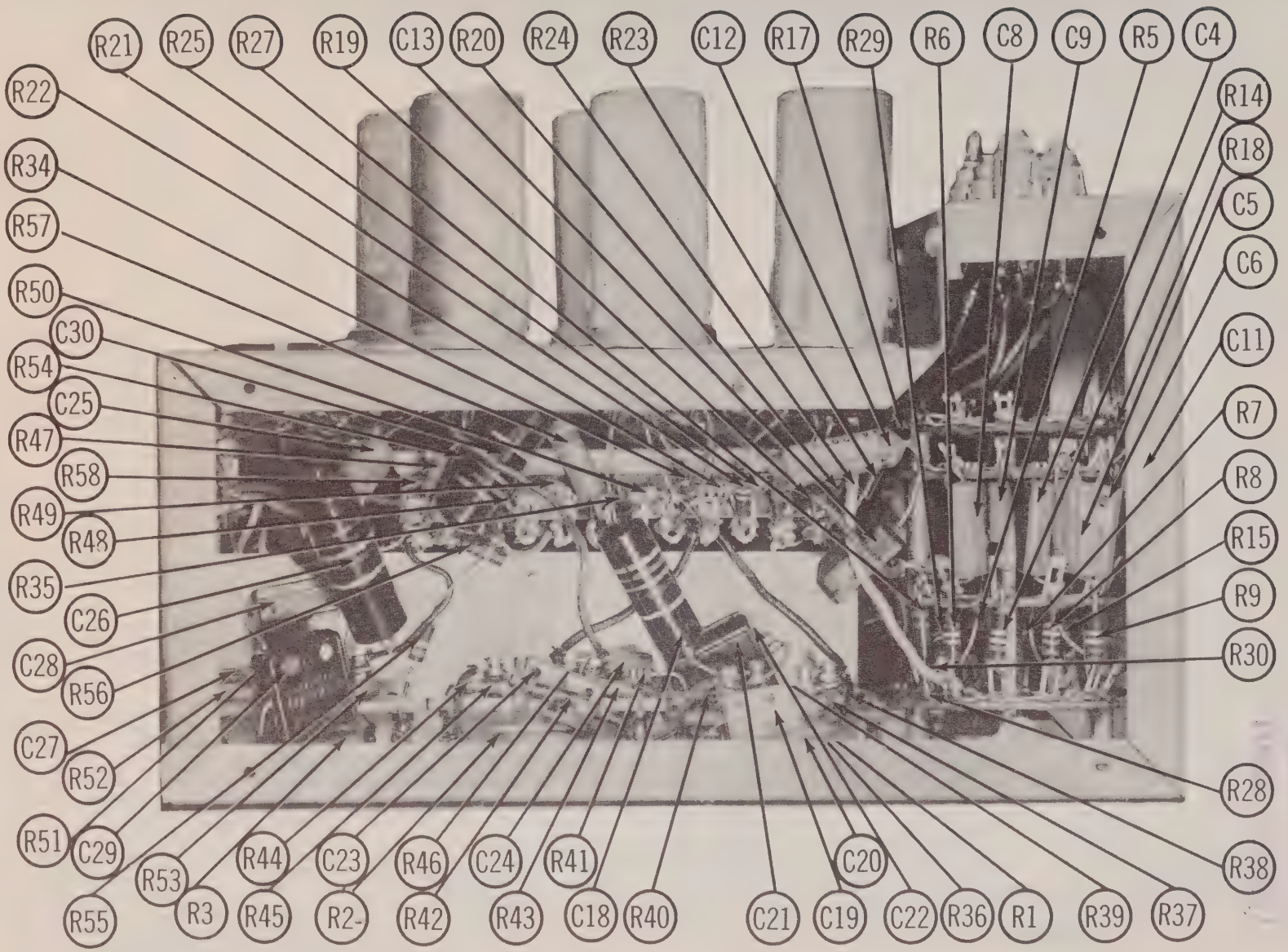
183-13

SCHEMATIC - MODEL 120-A



BOTTOM VIEW - MODEL 220-A



BOTTOM VIEW - MODEL 120-A

PARTS LIST-MODEL 120-A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	AF Amplifier	12AX7	12AX7	9A	
V2	AF Amplifier	12AU7	12AU7	9A	
V3	AF Amplifier	12AU7	12AU7	9A	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▰10	450		AFH4-63		UPT1145CC		FP426	TVL-4712	
B	■10	450								
C	▲25	25								
D	25	25								
C2A	▰10	450		AFH4-63		UPT1145CC				
B	25	25								
C	■10	450								
D	▲25	25								
C3	2000	500		1467-002	D6-202	1W5D2	GP2-333-202	MC457	1FM-22	Note 2
C4	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C5	240	500		1469-00025	TCZ-240	5R5T25	GP2K-241	MCB240		
C6	240	500		1469-00025	TCZ-240	5R5T25	GP2K-241	MCB240		
C7	1000	500		1468-001	D6-102	1W5D1	GP2-333-202	MC255	1FM-21	
C8	1500	500				1R5D15		MCB456		
C9	62	500		1469-00007		5R5Q7			MS-47	Note 3
C10	2000	500		1467-002	D6-202	1W5D2	GP2-333-202	MC457	1FM-22	Note 4
C11	330	500		1469-00035						Note 5
C12	.022	400		P488-022	DF-203	PTE4S22		PT4122	4TM-S22	Note 6
C13	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C14	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C15	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C16	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C17	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C18	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C19	240	500		1469-00025	TCZ-240	5R5T25	GP2K-241	MCB240		
C20	.0047	400		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	Note 7
C21	.015	400		P488-015		PTE6S15			6TM-S15	
C22	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	Note 1
C23	100	500		1468-0001	D6-101	5W5T1	GPIK-101	MC235	1FM-31	
C24	240	500		1469-00025	TCZ-240	5R5T25	GP2K-241	MCB240		
C25	.022	400		P488-022	DF-203	PTE4S22		PT4122	4TM-S22	Note 6
C26	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C27	47	500		1468-00005	D6-470	5W5Q5	GPIK-470	MC225	1FM-45	
C28	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	Note 8
C29	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C30	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	

Note 1. Not used in all models.
Note 2. Some models use .0022MFD in this application.
Note 3. Some Models use 68MMF in this application.
Note 4. Some Models use .0018MFD in this application.
Note 5. Some Models use 360MMF in this application.
Note 6. Some Models use .02MFD in this application.
Note 7. Some Models use .005MFD in this application.
Note 8. Some Models use .022MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1Meg	½	RVC-1Meg-4T	Q19-137X		BT-71	UT-443	Bass-Tapped @ 500KΩ
R2	1Meg	½	RVC-1Meg-4T	Q19-137X		BT-71	UT-443	Treble-Tapped @ 500KΩ
R3	500KΩ	½	RVC-500K-4TT			BT-66		Loudness-Tapped @100KΩ
R4A	500KΩ	½	RCV-500K-3	Q13-133	AG-60-Z	B-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R4A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SCOTT PART No.	IRC PART No.	NOTES
R5	22Meg	½		BTS-22Meg	
R6	270KΩ	½		BTS-270K	
R7	22Meg	½		BTS-22Meg	
R8	270KΩ	½		BTS-270	
R9	120KΩ	½		BTS-120K	
R10	270KΩ	½		BTS-270K	
R11	1.8Meg	½		BTS-1.8Meg	
R12	22Meg	½		BTS-22Meg	
R13	270KΩ	½		BTS-270K	
R14	56KΩ	½		BTS-56K	
R15	22Meg	½		BTS-22Meg	
R16	270KΩ	½		BTS-270K	
R17	330KΩ	½		BTS-330K	
R18	680KΩ	½		BTS-680K	
R19	1 Meg	½		BTS-1 Meg	
R20	2700Ω	½		BTS-2700	
R21	270KΩ	½		BTS-270K	
R22	47KΩ	½		BTS-47K	
R23	1 Meg	½		BTS-1 Meg	
R24	2700Ω	½		BTS-2700	
R25	270KΩ	½		BTS-270K	
R26	2.2Meg	½		BTS-2.2Meg	
R27	2.2Meg	½		BTS-2.2Meg	
R28	820Ω	½		BTS-820	
R29	22KΩ	½		BTS-22K	
R30	22KΩ	½		BTS-22K	
R31	1 Meg	½		BTS-1 Meg	
R32	1 Meg	½		BTS-1 Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SCOTT PART No.	IRC PART No.	NOTES
R33	1 Meg	½		BTS-1 Meg	
R34	4700Ω	½		BTS-4700	
R35	100KΩ	½		BTS-100K	
R36	1 Meg	½		BTS-1 Meg	
R37	330KΩ	½		BTS-330K	
R38	10KΩ	½		BTS-10K	
R39	33KΩ	½		BTS-33K	
R40	1 Meg	½		BTS-1 Meg	
R41	680KΩ	½		BTS-680K	
R42	1 Meg	½		BTS-1 Meg	
R43	33KΩ	½		BTS-33K	
R44	330 KΩ	½		BTS-330K	
R45	10KΩ	1		BTS-10K	
R46	33KΩ	1		BTS-33K	
R47	1500Ω	1		BTS-1500	
R48	100KΩ	1		BTS-100K	
R49	33KΩ	1		BTS-33K	
R50	33KΩ	1		BTS-33K	
R51	330KΩ	1		BTS-330K	
R52	47KΩ	1		BTS-47K	
R53	68KΩ	1		BTS-68K	
R54	820Ω	1		BTS-820	
R55	470KΩ	1		BTS-470K	
R56	1.2Meg	1		BTS-1.2Meg	
R57	47KΩ	1		BTA-47K	
R58	4.7Meg	1		BTS-4.7Meg	
R59	4700Ω	1		BTS-4700	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SCOTT PART No.		NOTES
M2	Bayonet	6-8	.150	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	SCOTT PART No.	NOTES
M3	Switch		On/off
M4	Switch		Noise Suppressor
M5	Switch		Record Compensator

PARTS LIST-MODEL 220-A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V4	AF Amplifier	6J5	6J5	6Q	
V5	AF Amplifier-Phase Inverter	6SN7GT	6SN7GT	8BD	
V6	Audio Output	6L6G	6L6G	7AC	
V7	Audio Output	6L6G	6L6G	7AC	
V8	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C31A	▬20	475		AFH4-14		UPT222245		FP444	R1084	
B	■20	475								
C	▲20	475								
D	20	475								
C32A	▬20	475		AFH4-14		UPT222245		FP444	R1084	
B	■20	475								
C	▲20	475								
D	20	475								
C33	50	100		PRS150/50		BR5015A		TC49	TVA-1414	
C34	8	450		PRS450/8		BR845A		TC71	TVA-1704	
C35	25	25		PRS25/25		BR252A		TC26	TVA-1205	Note 1
C36	33	500								
C37	100	500		1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C38	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C39	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C40	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C41	.022	400		P488-022	DF-203	PTE4S22		PT4122	4TM-S22	Note 6
C42	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C43	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C44	.022	400		P488-022	DF-203	PTE4S22		PT4122	4TM-S22	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R60A	50KΩ	½	RVC-50K-S	Q11-123	AG-44-S	AB-31	SU-35	Balance
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R60A
R61A	500Ω	½	RVC-500-S	Q11-103	AG-5-S	AB-4		Hum Balance
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1		Attach to R61A
R62A	500KΩ	½	RCV-500K-3	Q13-133	AG-60-Z	B-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R62A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: H H SCOTT PART No.	IRC PART No.	NOTES
R63	1 Meg	½		BTS-1 Meg	
R64	2700Ω	½		BTS-2700	
R65	100KΩ	1		BTA-100K	
R66	33KΩ	½		BTS-33K	
R67	470KΩ	½		BTS-470K	
R68	33KΩ	½		BTS-33K	
R69	25KΩ	10		1 3/4A-25K	
R70	100KΩ	1		BTA-100K	
R71	2200Ω	½		BTS-2200	
R72	220KΩ	½		BTS-220K	
R73	2.2Meg	½		BTS-2.2Meg	
R74	2200Ω	½		BTS-2200	
R75	100KΩ	1		BTA-100K	
R76	270KΩ	½		BTS-270K	
R77	2.2Meg	½		BTS-2.2Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: H H SCOTT PART No.	IRC PART No.	NOTES
R78	1000Ω	½		BTS-1000	
R79	1000Ω	½		BTS-1000	
R80	330KΩ	½		BTS-330K	
R81	330KΩ	½		BTS-330K	
R82	10KΩ	2		BTB-10K	
R83	68Ω	2			
R84	68Ω	2			
R85A	175Ω	20			
B	175Ω				
C	500Ω				
D	500Ω				
E	1000Ω				
R86	2.7Ω	1			
R87	2200Ω	1		BTA-2700	

TRANSFORMER (POWER)

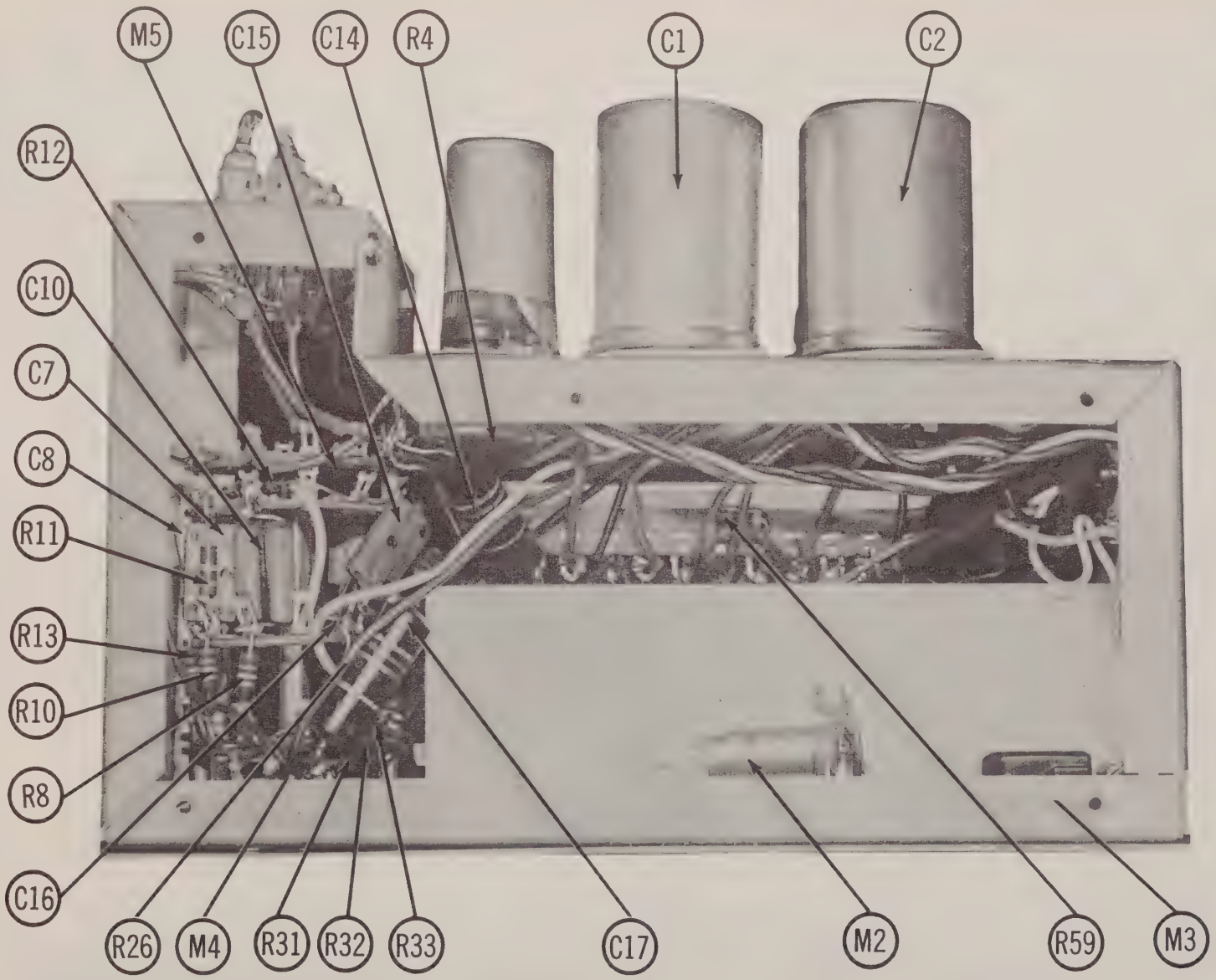
ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SCOTT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ 1.2A	730VCT .150ADC	5VAC @ 4A	6.3VAC @ 3.2A			P-2954		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SCOTT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	10KΩ CT	16Ω tap @ 8Ω, 4Ω, 2Ω	150Ω CT	.26Ω tap @ .21Ω, .16Ω, .14Ω						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: SCOTT PART No. FUSE	SCOTT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	MDL	2A 125V			313002 (3AG Slo-Blo)	342001	MDL-2	HKP



BOTTOM VIEW - MODEL 120-A

3924 MEADE ST.
DENVER, COLORADO

PURPOSE

The Type 220-A Laboratory Power Amplifier is designed to function as a power amplifier for the Type 120-A Equalizer-Pre amplifier. This combination forms the Type 214-A Remote Control Amplifier. The Type 220-A Power Amplifier can be used independently, however, as a separate power amplifier by using the Type 220-X1 Octal Adapter Plug supplied with the unit.

LEVEL CONTROL

For high-fidelity music reproduction, the LEVEL control is used for adjusting the music system most closely to its surroundings. When the 220-A Amplifier is used with the 120-A Equalizer Preamplifier, the LEVEL control should be adjusted to between 50 and 100 in order to achieve the best operation of the automatic LOUDNESS control in the 120-A unit. The 220-A LEVEL setting should be higher if inefficient loudspeakers, large rooms, or highly sound absorbant rooms are used for music reproduction. For efficient loudspeakers on small rooms, the level control should be set somewhat closer to 50 in order to avoid over-emphasis of the bass. For average use, the recommended LEVEL setting is 60.
When the 220-A is used as a separate laboratory power amplifier, the LEVEL control can be used as a variable gain control for changing the degree of amplification. The 20 watt undistorted power rating is not changed by the LEVEL settings since the LEVEL control is merely a means for compensating to input signals and external conditions, as described above.

INPUT CONNECTIONS

Two inputs are provided. For use with the 120-A Equalizer-Preamplifier, input "120-A" should be used. The one labeled "INPUT" requires 0.5 volts for 20 watts output, the one labeled "120-A" requires 1.5 volts for 20 watts output. The input impedance of the "INPUT" is 0.5 megohms shunted by 60 mmf. The input impedance of the "120-A" is 1.5 meghoms shunted by 20 mmf. The 220-A LEVEL Control operates on both inputs, of which only one at a time is to be used .

SPEAKER OR OUTPUT CONNECTIONS

Loud-speakers, or loads, should be connected between 0 and the appropriate impedance screw-terminal. The impedance-terminal used should be the one nearest in value to the loud-speaker impedance. If the actual speaker impedance is midway between two terminals, the larger valued terminal should be used. For example, an 11 ohm speaker should be connected to Terminal 8, while a 12 to 25 ohm speaker should be connected to Terminal 16. If more than one speaker is used, the speaker impedances should be divided by the number of speakers, and these obtained values used for determining terminal connections. For example, if a 16 ohm speaker and an 8 ohm speaker are to be used on the 220-A, the 16 ohm speaker should be connected to Terminal 8 and the 8 ohm speaker to Terminal 4. Since the secondary winding of the output transformer is floating, terminals "0" and "G" should be connected for normal operation.

POWER CONNECTIONS

When the 220-A is operated with the 120-A Equalizer-Preamplifier, the Type 220-X1 Octal Adaptor Plug should be removed from the octal socket, and the power plug from the 120-A should be inserted in its place. The power switch on the 120-A will then turn both units on and off.
For use as a separate laboratory power amplifier, the 220-A Amplifier is operative as soon as the Type 220-X1 Octal Adaptor Plug is inserted in the "REMOTE" socket and the power plug inserted in a 117 volt 60 cycle outlet.
If power for other equipment is to be supplied by the 220-A Power Amplifier, connections can be made to an octal plug inserted in the "REMOTE" socket. The different supply voltages for external use are connected to the following pins of the octal socket:

Pin 1	B- (Note 1)	Pin 5	117 volts 60 cycles (Note 3)
Pin 2	6.3 volts, a.c., 2.5 amp. (Note 2)	Pin 6	117 volts 60 cycles (Note 3)
Pin 3	-24 volts, 150 m.a.	Pin 7	6.3 volts a.c. 2.5 amps (Note 2)
Pin 4	+24 volts, 150 m.a. (Note 1)	Pin 8	B+ 310 volts d.c. 10 m.a.

Note 1 Pins 1 and 4 are connected internally to the chassis.
Note 2 6.3 volts biased 20 volts positive.
Note 3 (One side of the power line is available for remote on and off control of the equipment). Connect Pins 5 and 6 together to turn equipment on.

POWER SOCKET

117 volt 60 cycle a.c. power unfused up to 2½ amps or 250 watts is available at the a.c. power outlet. This outlet is controlled by the "REMOTE" a.c. on-off switch.

CAUTION

The different supply voltages must not be inter-connected externally, otherwise faulty operation or destruction of the equipment may occur and the guarantee will be void. If the 24 volt d.c. supply is not used, the 160 ohm (or 150 ohm) 5 watt resistor, as mounted in the Type 220-X1 Octal Adaptor Plug, should be left connected by insertion of this octal plug. THE 220-A POWER AMPLIFIER SHOULD BE OPERATED ONLY IN A WELL VENTILATED SPACE. DO NOT TURN ON 220-A POWER UNLESS EITHER THE 120-A OCTAL PLUG OR THE TYPE 220-X1 OCTAL ADAPTER PLUG ARE INSERTED IN THE OCTAL "REMOTE" SOCKET.

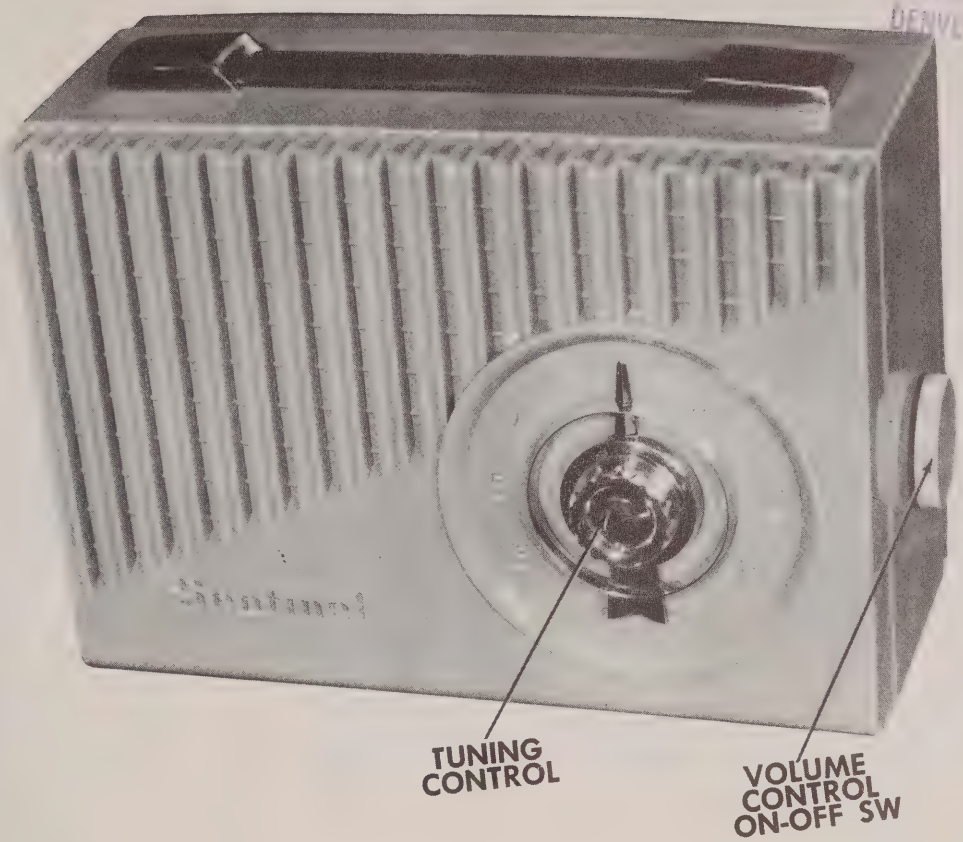
FACTORY ADJUSTMENTS

The BALANCE Control is adjusted at the factory for minimum distortion and should not be operated. The HUM BALANCE control may be adjusted for minimum noise output. It is adjusted for the best signal to noise ratio of the 220-A Amplifier.

SENTINEL
MODELS 1U345P, 345P

DENVER, COLORADO

SENTINEL
MODELS 1U345P, 345P



SENTINEL
MODELS 1U345P, 345P

TRADE NAME	Sentinel Models 1U-345P, 345P
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Ill.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (FOUR)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp. 3V4 Audio Output.
POWER SUPPLY RATING	110-120 Volts AC/DC (or) 4.5Volts "A" Supply & 90Volts "B" Supply .12 Amp. @ 117 Volts AC (or) 100 MA @ 4.5 Volts DC & 12MA @ 90 Volts DC
TUNING RANGE—BROADCAST	530-1660 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible, IF AC power is used, use an isolation transformer when available. If not connect a .1MFD capacitor in series with low side to the signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates of rear section of tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation
2.	"	"	1660 KC	"	"	A5	Replace bottom plate on chassis. Adjust for maximum output.
3.		Loop	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

SENTINEL MODEL IU-345P

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AC	
V3	Det. -AVC-AF Amp	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150	25E29	AFH3-78		UP5315C10		FP309	R1050	
B	▲40	150								
C	100	10								
C2	.05	200	23E216	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	100		23E24	SI100N750	TCN-100		N750L-101	NT-531	5TCU-T1	
C4	100		23E24	SI100N750	TCN-100		N750L-101	NT-531	5TCU-T1	
C5A	2000		23E2024	BPD-002	DD-202	TM5D2	801-002	DC-522	34C5	
B	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C	100			SI100	D6-101	TM5T1	GP1K-101	UC531		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C6	5000		23E2025	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C7	.2	200	23E220	484-2		PTE4P22		TP429	2TM-P22	
C8	.2	200	23E220	484-2		PTE4P22		TP429	2TM-P22	
C9	.05	400	23E416	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C10	.2	400	23E2021			NF10137			72P53	Note
C11	10000		23E2025-4	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK -S1	

Note Special resonate capacitor not used in model 345P

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2 Meg	½	28E83A	Q13-139	AG-66-Z	AB-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB -2	KB-2	US-27	Attach to R1A

RESISTORS

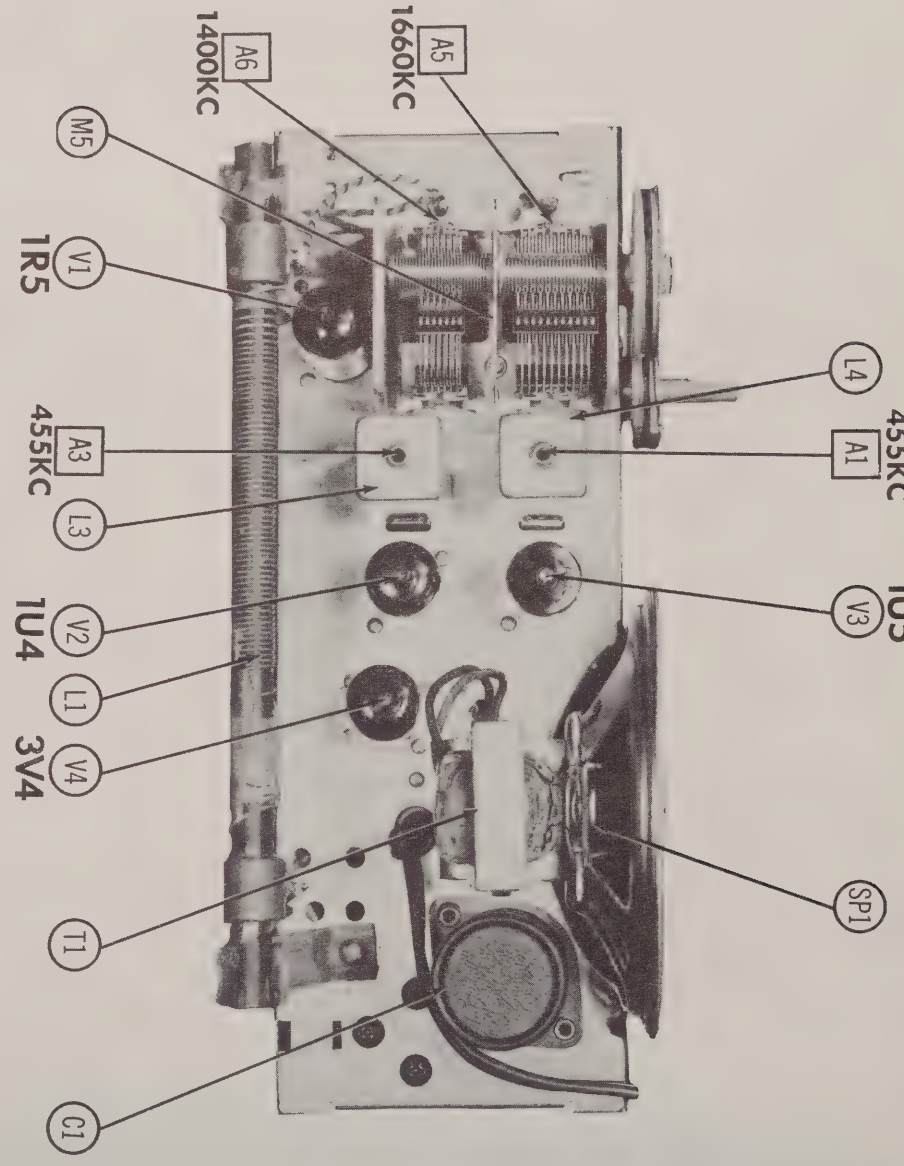
ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R2	68KΩ	½	27E683	BTS-68K	
R3	6800Ω	½	27E682	BTS-6800	
R4	4.7Meg	½	27E475	BTS-4.7Meg	
R5	470Ω	½	27E471	BTS-470	
R6	470KΩ	½	27E474	BTS-470K	
R7	4.7Meg	½	27E475	BTS-4.7Meg	
R8	270Ω	½	27E271	BTS-270	
R9	330Ω	½	27E331	BTS-330	
R10	100KΩ	½	27E104	BTS-100K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R11	4.7Meg	½	27E475	BTS-4.7Meg	
R12	4.7Meg	½	27E475	BTS-4.7Meg	
R13	1 Meg	½	27E105	BTS-1 Meg	
R14	2.2Meg	½	27E225	BTS-2.2Meg	
R15A	1810Ω	8	27E1005		
B	610Ω				
R16	68Ω	1	27E680-3		
R17	33Ω	½	27E330-2		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA: SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	7.8KΩ	3.2Ω	388Ω	.32Ω	38G103	A-3329 ①	A-2927 ①	RO-13 ①	S-7K ①	① Bend mtg. tabs down, file out slots mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SENTINEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	1E29-2	ST-113 Mod P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SENTINEL PART No.	MERIT PART No.	
L1	Loop Ant.	.7Ω		64E36		
L2	Osc. Coil	2.5Ω	9.2Ω	20E744		
L3	Input IF	14.5Ω	14.5Ω	20E742		
L4	Output IF	28Ω	27Ω	20E743	BC-352	

SELENIUM RECTIFIER

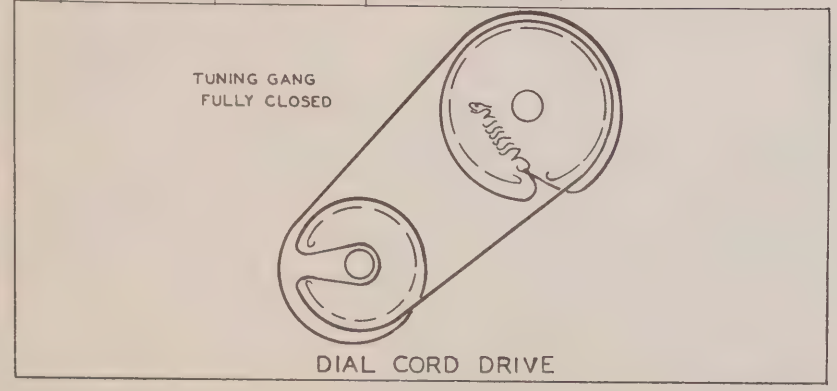
ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	SENTINEL PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.062A	57E14	NB5	5M4	1003	6S75	

BATTERIES

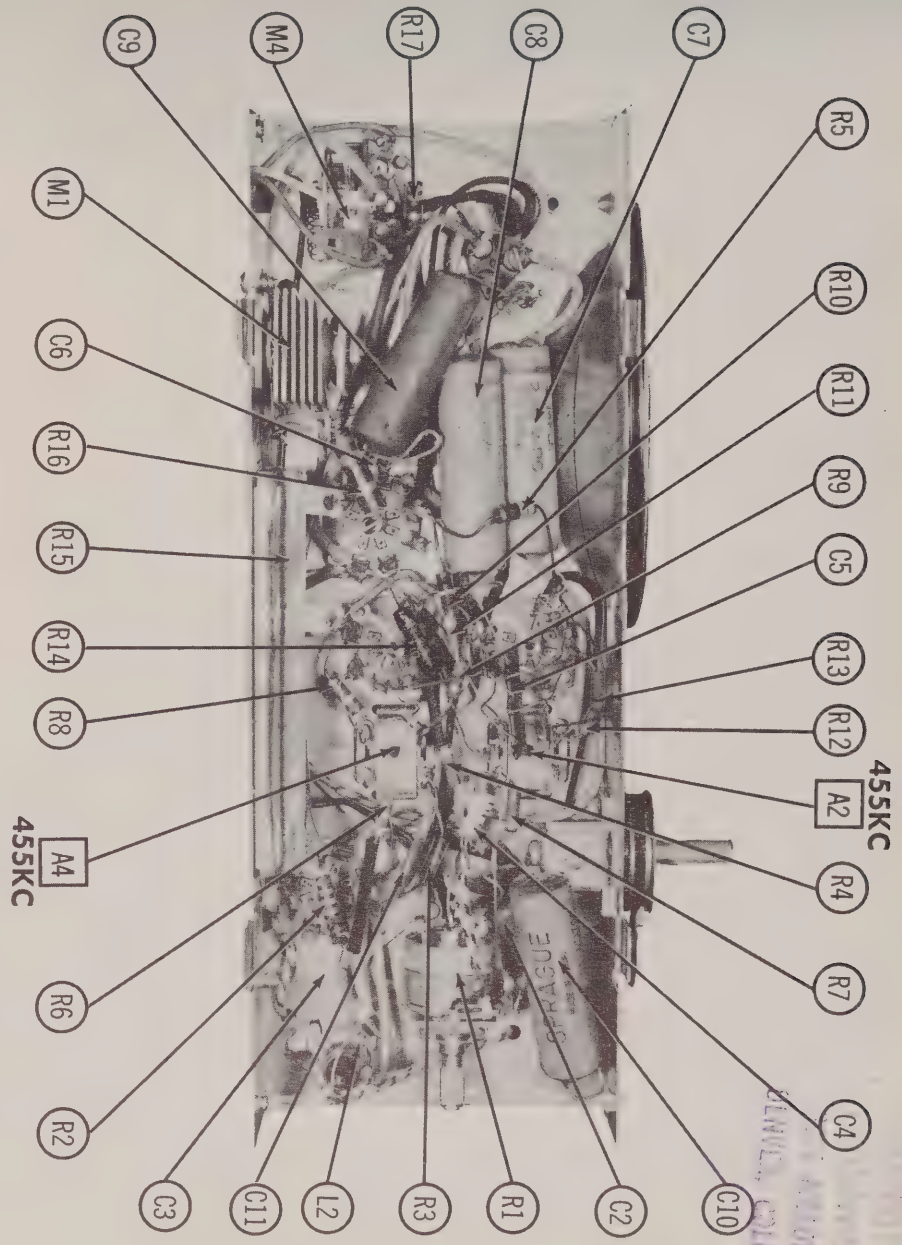
ITEM No.	VOLTAGE	SENTINEL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	4.5V		746			F3			
M3	90V			490			N60		

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M4	Switch	29E20	Power Change-over
M5	2 Gang Var. Cap.	24E59	(7-255MMF, 11-189MMF)
	Cabinet	20E747	Complete-Walnut
	Cabinet	20E747-2	Complete-Green
	Cabinet	20E747-3	Complete-Ivory
	Cabinet	20E747-4	Complete-Maroon
	Cabinet	20E747-5	Complete-Black
	Cabinet	20E747-6	Complete-Yellow
	Knob	37E73-3	Volume-Walnut
	Knob	37E73-4	Volume-Green
	Knob	37E73-5	Volume-Ivory
	Knob	37E73-6	Volume-Maroon
	Knob	37E73-7	Volume-Black
	Knob	37E73-8	Volume-Yellow
	Knob	35E33	Dial Indicator-All Models.



CHASSIS—BOTTOM VIEW



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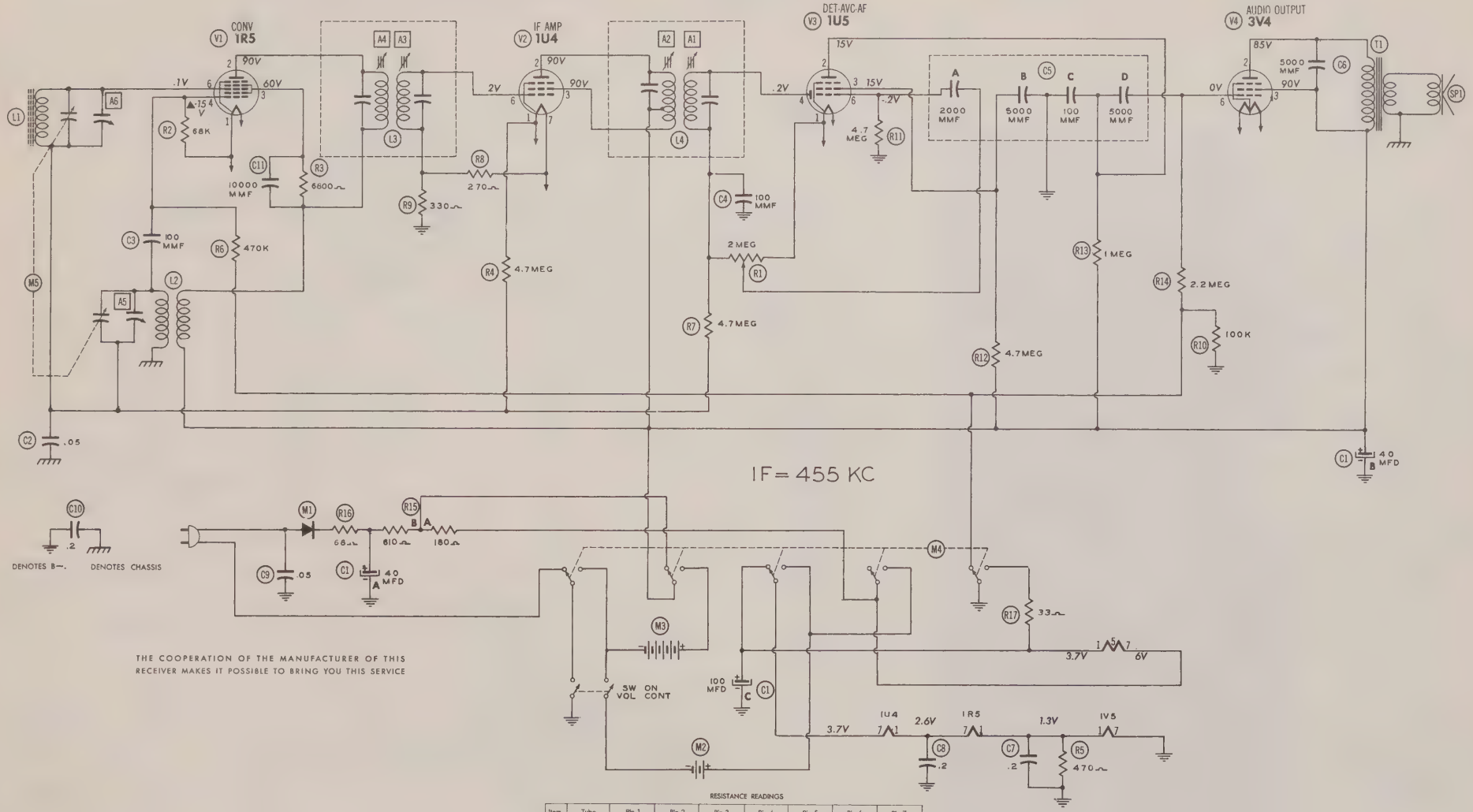
SENTINEL MODEL IU-345P

SENTINEL MODEL IU-345P



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†680Ω	††7.4KΩ	68KΩ	*	2.7Meg	*
V 2	1U4	▪	†680Ω	†680Ω	0Ω	*	180Ω	*
V 3	1U5	*	††Meg	††4.7Meg	2 Meg	INF	4.7Meg	*
V 4	3V4	*	††.1KΩ	-†680Ω	0Ω	*	2.2Meg	*

ALL MEASUREMENTS TAKEN WITH POWER CHANGE OVER SWITCH IN AC LINE POSITION
† MEASURED FROM OUTPUT M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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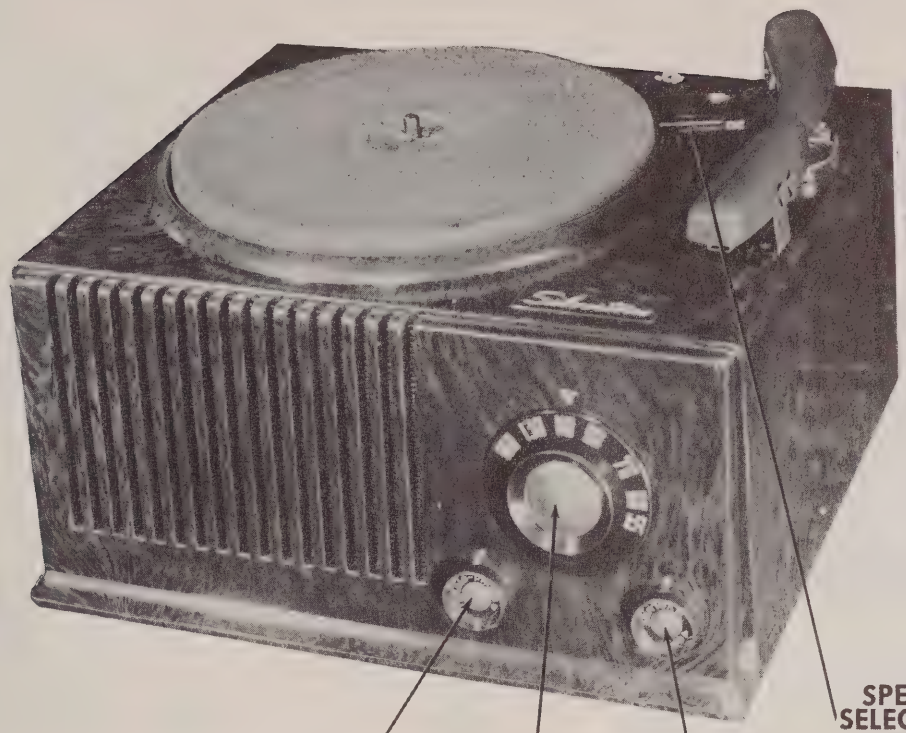
183-14

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODEL 1032 (Ch. 528.196)



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SILVERTONE
MODEL 1032 (Ch. 528.196)

TRADE NAME	Silvertone Model 1032 (Ch. 528.196)
MANUFACTURER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	AC Operated AM-Phono Combination Superheterodyne Receiver with Manual Record Player
TUBES (Five)	Types 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1630 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (grid) of 12SA7 (V1). Low side to B-.	455KC (400∿Mod.)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1630 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

After alignment replace receiver in cabinet, turn tuning gang fully open and set dial so that the "1" in 160 is aligned with the index mark.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF Amp	12SQ7	12SQ7	8Q	
V4	Audio Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	T18-304	PRS150/50-30		EDL5315		2N520	TVA-2450	Red
B	30	150								Yellow
C2	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	47		T15-229	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-T47	
C4A	220		T17-104	SI220	D6-221	5W5T25	GP2K-221	UC-5322	34C3	
B	2000			BPD-002	DD-202	TM5D2	801-002	DC-522		
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C5	.02	400	T16-150	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C6	.005	600	T16-190	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C7	.05	400	T16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	.05	400	T16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C9	.05	400	T16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	T24-194	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

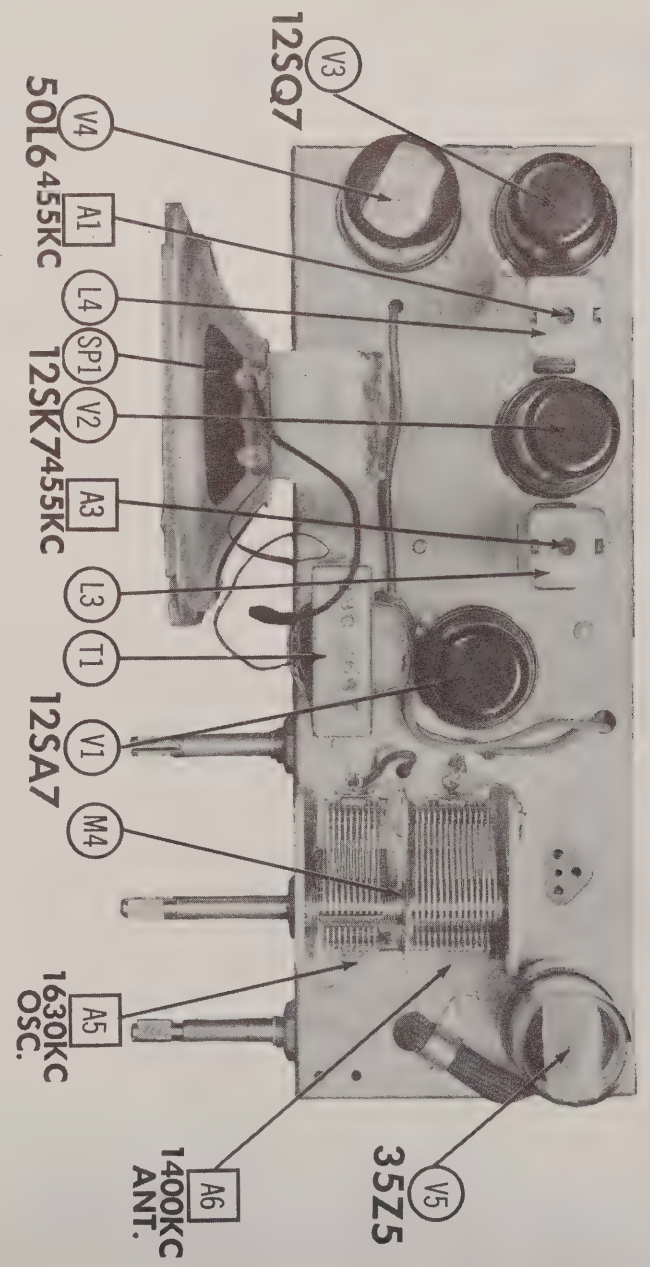
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	T60-659	BTS-22K	
R3	2.2Meg	½	T60-726	BTS-2.2Meg	
R4	47KΩ	½	T60-730	BTS-47K	
R5	560KΩ	½		BTS-560K	Note
R6	10Meg	½	T60-728	BTS-10Meg	
R7	220KΩ	½	T60-667	BTS-220K	
R8	560KΩ	½		BTS-560K	Note
R9	180Ω	½	T60-774	BTS-180	
R10	1000Ω	1	T60-732	BTA-1000	
R11	27Ω	½	T60-690		

Note: Some Models use a 470KΩ resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.46KΩ	3Ω	227Ω tap ⓐ 12Ω	.58Ω	80-268	A-3330	A-3031	RO-3		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3Ω	179393	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SILVERTONE PART No.	MERIT PART No.	
L1	Loop Ant.	3Ω		T82-71		
L2	Osc. Coil	1.9Ω	7.5Ω	T10-572		
L3	Input IF	20Ω	20Ω	T10-508	BC-352	
L4	Output IF	22Ω	22Ω	T10-479	BC-353	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	T83-702	GC-AG-J	G-AG	WC36B	A56U	43 *2400	0-2 or S-2	* Tone Arm

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

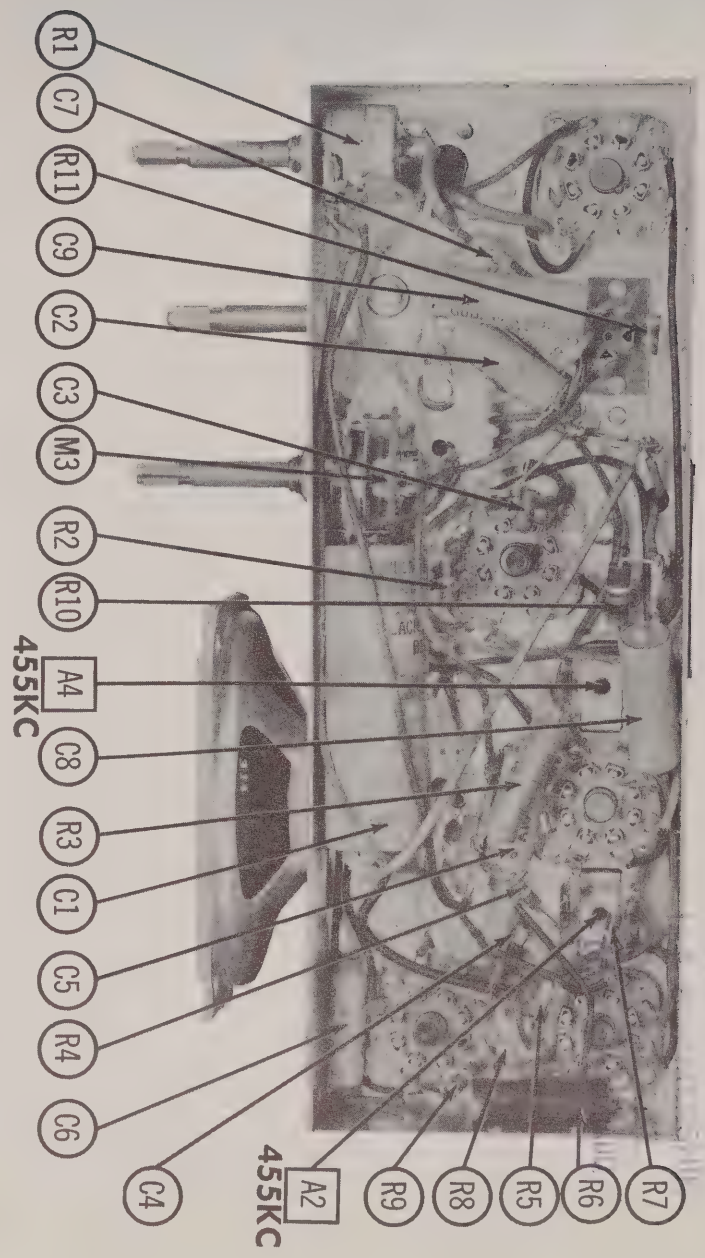
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	WALCO PART No.	JENSEN PART No.	
M2	T83-703	W-3AGA or W-3AGS	A-742 or A-842	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	T69-189	Radio-Phono
M4	2 Gang Var. Cap	T19-213	(20-472MMF, 27-202MMF)
	Cabinet	T42-485	
	Knob	T52-323	Volume
	Knob	T52-324	Tuning
	Knob	T52-328	Radio-Phono

CHASSIS—BOTTOM VIEW

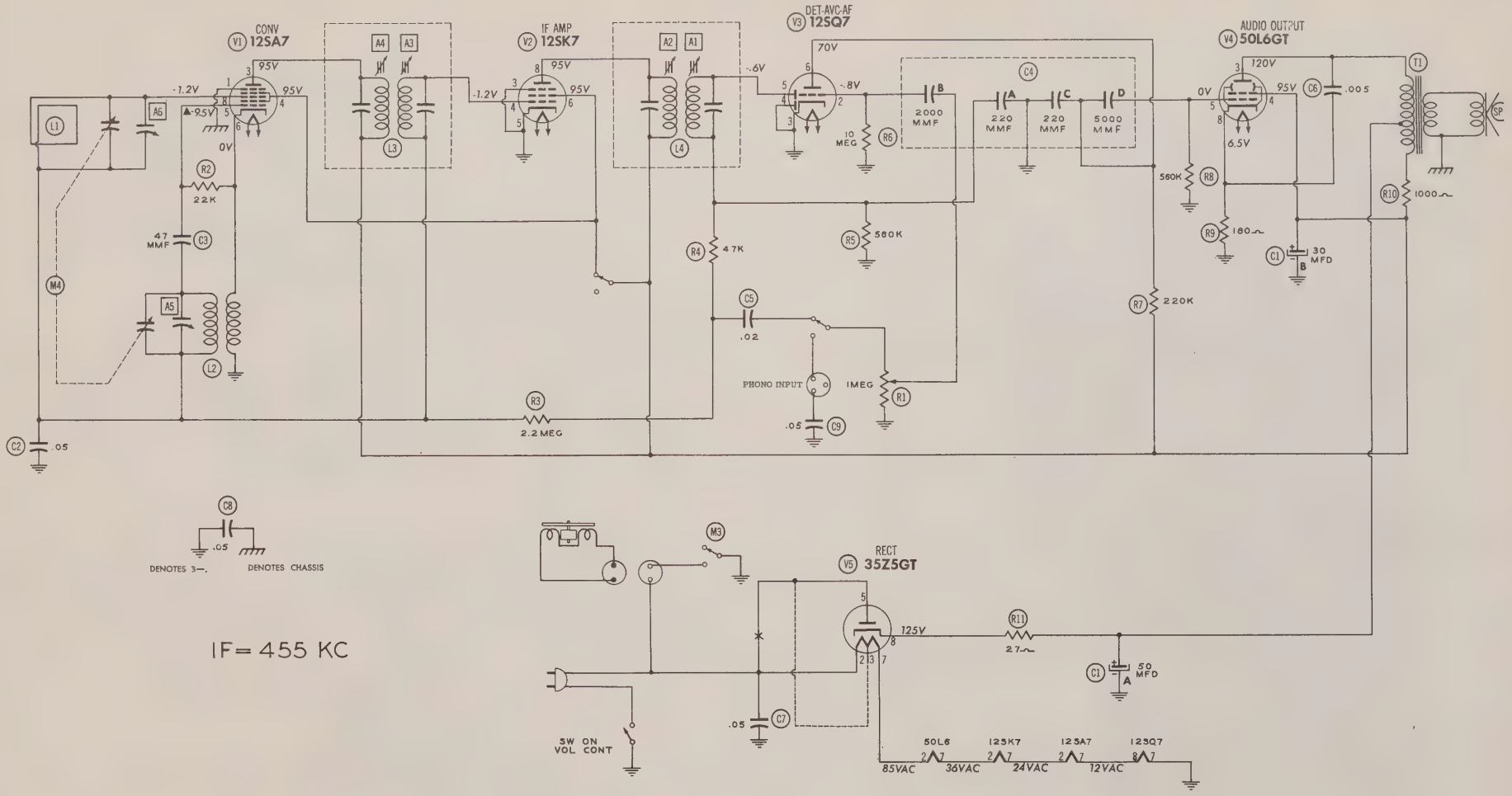


SET 183

FOLDER 15

SILVERTONE
MODEL 1032 (Ch. 528.196)

SILVERTONE
MODEL 1032 (Ch. 528.196)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	¶0Ω	24Ω	†1KΩ	†1KΩ	22KΩ	1.9Ω	12Ω	2.8Meg
V 2	12SK7	¶0Ω	36Ω	0Ω	2.8Meg	0Ω	†1KΩ	24Ω	†1KΩ
V 3	12SQ7	¶0Ω	10Meg	0Ω	0Ω	560KΩ	†220KΩ	0Ω	12Ω
V 4	50L6GT	INF	86Ω	†242Ω	†1KΩ	560KΩ	0Ω	36Ω	180Ω
V 5	35Z5GT	INF	121Ω	103Ω	INF	121Ω	INF	86Ω	30KΩ

ALL MEASUREMENTS TAKEN IN RADIO POSITION
† MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER
¶ MEASURED FROM CHASSIS.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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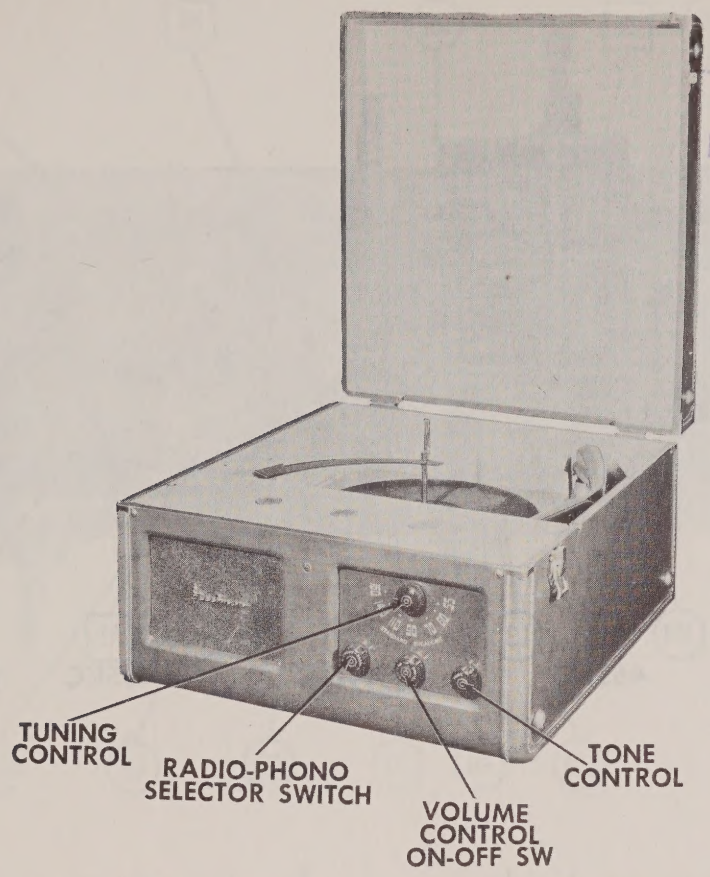
183-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



STEELMAN
MODEL 597

TRADE NAME	Steelman Model 597
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne with 3 Speed Automatic Record Changer
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier (See Parts List for Octal or Lock-in Type Equivalents)
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .15 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to green lead on antenna loop. Low side to B-.	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1600 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400 KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON THE RECORD CHANGER UNIT - SEE V-M MODEL 950 IN PHOTOFACT SET #107 - FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	Converter	12BE6	12BE6	7CH	
B	Converter	12SA7	12SA7	8R	
C	Converter	14Q7	14Q7	8AL	
V2A	IF Amplifier	12BA6.	12BA6	7BK	
B	IF Amplifier	12SK7	12SK7	8N	
C	IF Amplifier	14A7	14A7	8V	
V3A	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
B	Det.-AVC-AF Amp.	12SQ7	12SQ7	8Q	
C	Det.-AVC-AF Amp.	14B6	14B6	8W	
V4A	Audio Output	50C5	50C5	7CV	
B	Audio Output	50L6	50L6	7AC	
C	Audio Output	50A5	50A5	6AA	
V5A	Rectifier	35W4	35W4	5BQ	
B	Rectifier	35Z5GT	35Z5GT	6AD	
C	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	20	150		PRS150/40-30-20		EDL44215		3N532	TVA-3423	Yellow
B	40	150								Blue
C	40	150								Red
C2	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3	200	500		1468-0002	D6-201	5W5T2	GP2K-201	MC237	1FM-32	
C4	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C5	200	500		1468-0002	D6-201	5W5T2	GP2K-201	MC237	1FM-32	
C6	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C7	.0018	600		P688 -002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C8	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C9	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C10	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	

CONTROLS

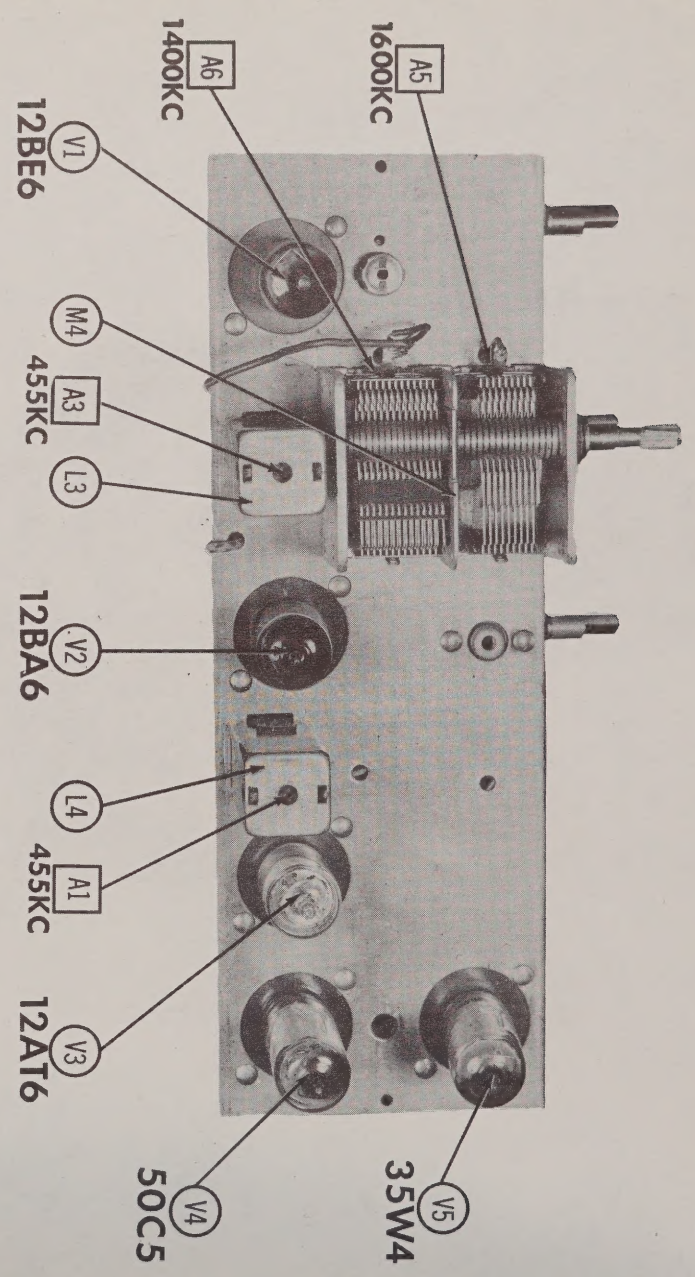
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEELMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	VC-18	Q13-137	AG-63-Z	B-70-S	U-53	Volume-See Note
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Not Req.	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½		Q13-133	AG-60-Z	B-60	U-48	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

Note: Some Models use 500KΩ control in this application.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	22KΩ	½		BTS-22K	
R4	220Ω	½		BTS-220	
R5	2.2Meg	½		BTS-2.2Meg	
R6	220KΩ	½		BTS-220K	
R7	4.7Meg	½		BTS-4.7Meg	
R8	220KΩ	½		BTS-220K	
R9	150Ω	½		BTS-150	
R10	330Ω	1		BTA-330	
R11	2200Ω	1		BTA-2200	
R12	18Ω	½			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		STEELMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.26KΩ	3.6Ω	148Ω	.4Ω	11A1	A-3332 ①	A-3025 ①	RO-2 ①	S-1X ①	① Bend mtg. tabs down, file out slots mount on original mtg. bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.6Ω		ST-105 Mod. P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	STEELMAN PART No.	MERIT PART No.	
L1	Loop Ant.	3.3Ω				
L2	Osc. Coil	.6Ω	5.6Ω			
L3	Input IF	22Ω	22Ω		BC-352	
L4	Output IF	22Ω	22Ω		BC-353	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	STEELMAN PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-J	A-1 A-3	W22AB	A65MG A62A	96-T	0-1 or S-1 and 0-3 or S-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR RESPECTIVE CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW

PHONO NEEDLE

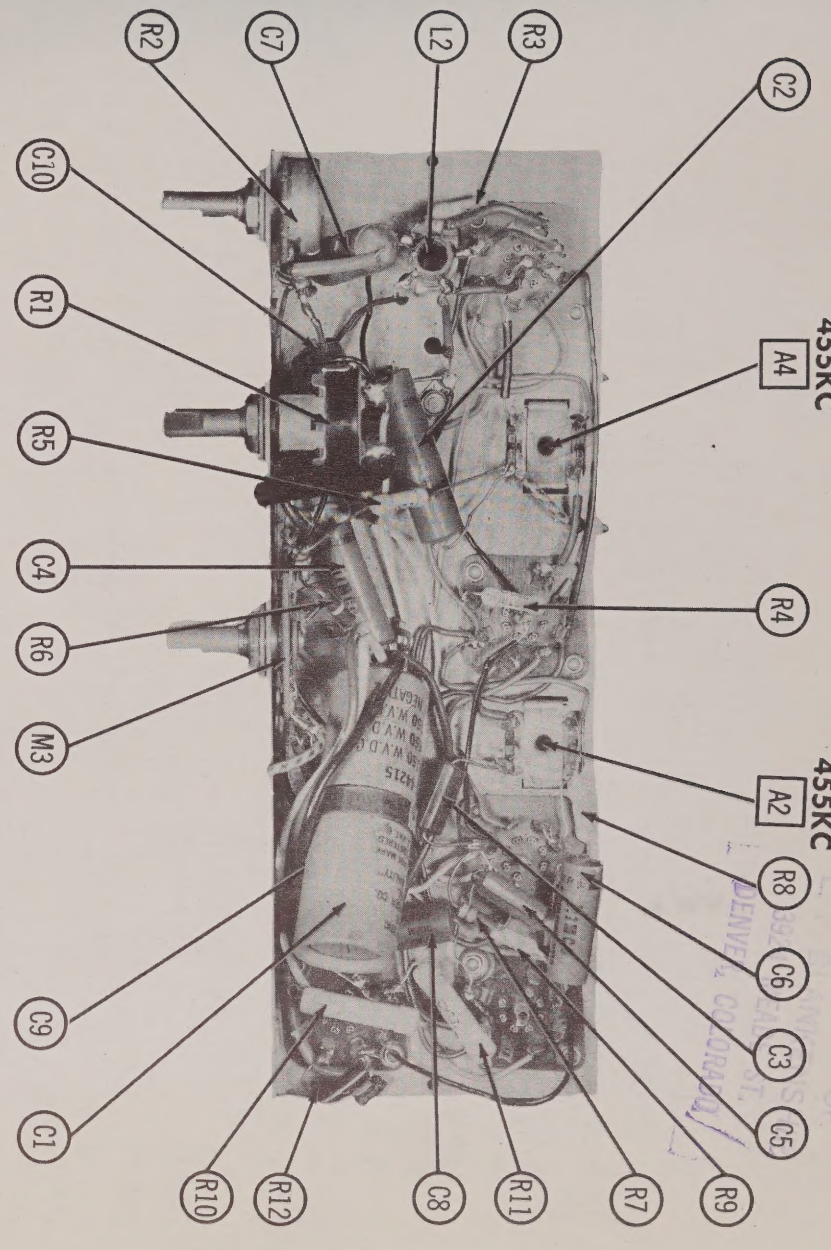
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-30A and W-30MGS	JP-30 and JPS-30LP	

MISCELLANEOUS

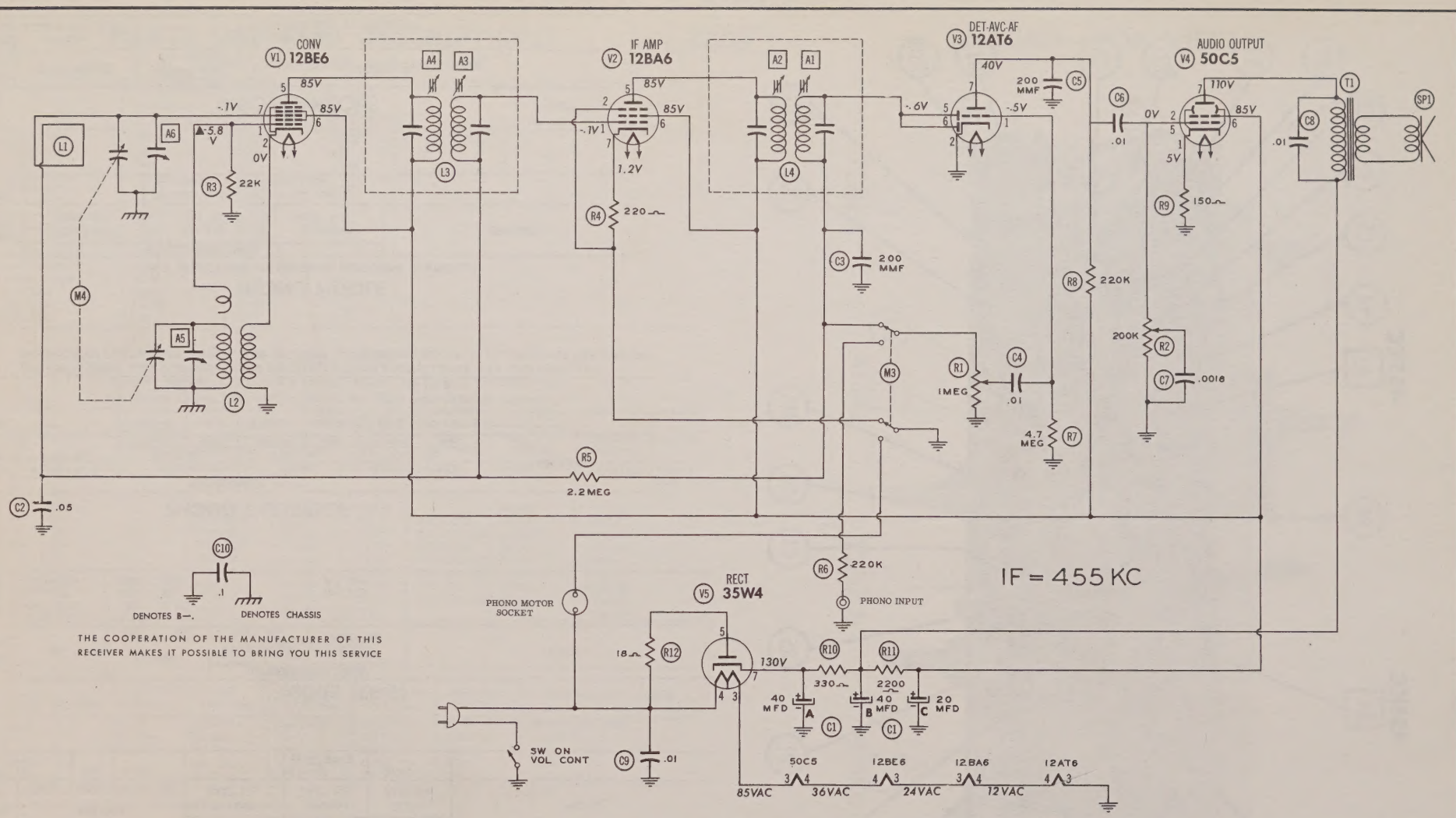
ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M3 M4	Switch 2 Gang Var. Cap.		Radio-Phono (34-455MMF, 29-195MMF)

CHASSIS—BOTTOM VIEW



STEELMAN MODEL 597

STEELMAN MODEL 597



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	24Ω	36Ω	†2.5KΩ	†2.5KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	24Ω	12Ω	†2.5KΩ	†2.5KΩ	220Ω
V 3	12AT6	4.7Meg	0Ω	0Ω	12Ω	1Meg	1Meg	†220KΩ
V 4	50C5	150Ω	500KΩ	86Ω	36Ω	500KΩ	†2.5KΩ	†478Ω
V 5	35W4	†330Ω	†330Ω	86Ω	121Ω	139Ω	103Ω	40KΩ

ALL MEASUREMENTS TAKEN IN RADIO POSITION ONLY
† MEASURED FROM PIN 7 of V5.

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183-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.